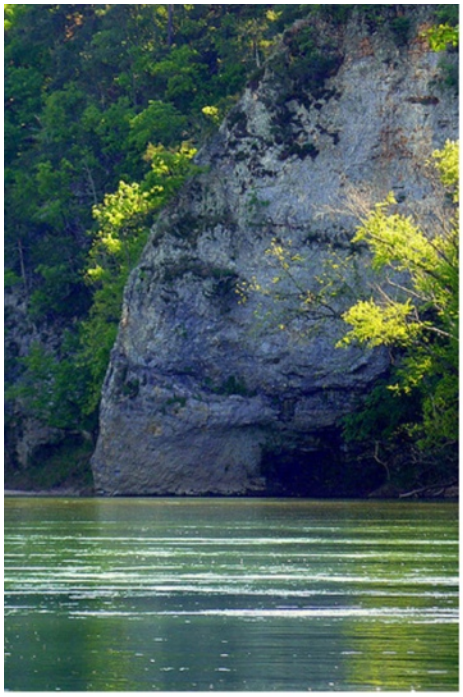
GCPO
Gulf Coastal Plains & Ozarks
Landscape Conservation Cooperative

LANDSCAPE CONSERVATION
COOPERATIVES



2013 Annual Report

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Gulf Coast pier fishing - Steve Hankins; well-managed longleaf pine - USFWS; wood duck & ducklings, *Aix sponsa* - David-Mitchell; elephant rock, Illinois River, OK - Thomas & Dianne Jones;

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p. 3: gulf beach lines - Katjusa Cisar

p. 5: green darner dragonflies, *Anax junius* - J.N. Stuart, US Fish & Wildlife Service (USFWS) Southeast; cave salamander, *Eurycea lucifuga* - Todd Crabtree, USFWS

p. 7: Current River, Ozarks, MO - Elizabeth Meyer, National Park Service via nps.gov

p. 11: prescribed burn, St. Vincent NWR, FL - USFWS Southeast

p. 15: forester at Bienville National Forest, MS - USDA; Arkansas River Farelly Lake - zeesstof

p. 16: eastern US freeze - Nasa Goddard Space Flight

p. 17: Grand Bay NWR marsh edge, MS & AL - USFWS

p. 18: eroded dunes - USFWS; endangered Interior least tern, *Sterna antillarum athalassos* - USFWS

p. 19: Northern long-eared bat, *Myotis septentrionalis* - Tennessee Wildlife Resources Agency (TWRA) via TWRA; Buffalo River - TheTurducken; Barrens silky aster, *Symphyotrichum pratense* - USDA Natural Resources Conservation Service via Plants Database

p. 20: Texas salt marsh - Corey Leopold; salt pans, Grey tree frog, *Hyla versicolor* - Cliff; Gulf pier sunset - Kathy

p. 21: agricultural runoff, TN - USDA; Mississippi-Atchafalaya River plumes, Gulf of Mexico - eutrophication&hypoxia; Nancy Maynard, climate change speaker - Nasa Goddard Space Flight Center

p. 22: map, Ozarks in the autumn - OakleyOriginals; remote sensing, US - fas.org; pioneer sod house, Shaw Nature Reserve, MO - Philip Leara

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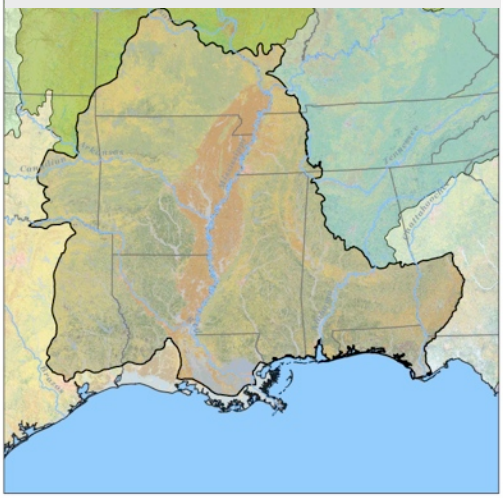
Table of Contents

From our Steering Committee Co-chairs

2013: The GCPO LCC's year of progress

Kenny Ribbeck, GCPO LCC Steering Committee Chair, Wildlife Division Administrator, Louisiana Department of Wildlife and Fisheries

Steve Patrick, GCPO LCC Steering Committee Vice Chair, Assistant Executive Director for Field Operations, Tennessee Wildlife Resources Agency



The year 2013 saw your Gulf Coastal Plains & Ozarks Landscape Conservation Cooperative fully mature into an effective network for conservation science, with the development of our GCPO LCC 5-year Strategic Plan and the drafting of an Integrated Science Agenda. These strategic documents provided critical direction for the GCPO LCC's first Request for Proposals that focused on five key knowledge gaps:

- Integrating Multi-disciplinary Conservation Goals
- Evaluating Species and Landscape Endpoints
- Characterization of Flow
- Economic and Cultural Indicators
- Addressing Science Needs from Science Agenda

The final portfolio of 9 projects selected for funding represents a significant LCC investment in research that complements and bolsters the science, restoration and management ongoing across our region. In 2013, your LCC also led development and was awarded two multi-LCC projects and one nationally-funded research project, and the GCPO LCC is a co-sponsor in two additional multi-LCC projects led by other Cooperatives. All of these efforts will provide a strong foundation for our 2014-15 focus on developing a conservation blueprint for the entire GCPO region.

We believe that this list of achievements signals an LCC that is working effectively to achieve its mission. Part of our success stems from working through the lens of Strategic Habitat Conservation to conduct the highest priority science with an empirical focus on informing land management decisions. Part of our success comes from the work of our dedicated staff. However, the lion's share of the GCPO LCC's success is undoubtedly due to the ongoing participation of you, our widespread GCPO conservation community, and to all of the work that you do around the region. Your collaboration makes all the difference.

We salute you, our Adaptation Science Management Team, our Partnership Advisory Council, our Steering Committee, our Proposal Review Teams, our Technical Advisory Teams and the many others who stay in touch personally and online through our http://gcpolcc.org web community. We can hardly wait to see the progress that's in store for 2014!

Best Regards,

Kenny Ribbeck & Steve Patrick

GCPO LCC 2013 Annual Report by the Numbers: Year of Progress

Version 4 of our Science Agenda

The GCPO LCC Integrated Science Agenda

- 180 million acres
- 12 broadly defined habitat types
- 9 high priority terrestrial and aquatic focal habitats in 5 subregions of the GCPO
- 5 conceptual models for priority systems
- 7 science need themes
- 77 indicator species
- > 600 species of greatest conservation need

Our GCPO LCC Leadership & Community

First joint Steering Committee meeting with the Southeast Aquatic Resources Partnership

- 26 Steering Committee members
- 10 Partnership Advisory council members
- 38 Adaptation Science Management Team members
- 9 technical advisory teams starting up
- 977 http://gcpolcc.org members
- 19,919 website visits
- 12,661 unique visitors

Our First Research Request for Proposals

The first GCPO LCC Research Request for Proposals

- $1.75 million available
- $17 million ask, >$28.8 potential leverage
- 78 proposals in 5 topic areas
- Integrating Multi-disciplinary Conservation Goals: 12 proposals
- Evaluating Species and Landscape Endpoints: 25 proposals
- Characterization of Flow: 6 proposals
- Economic and Cultural Indicators: 11 proposals
- Addressing Science Needs from Science Agenda: 24 proposals
- 33 reviewers in 5 teams of technical reviewers
- 9 projects approved
- 42 principal investigators
- $1,483,344 awarded

Our First 5-Year Strategic Plan

First 5-year Strategic Plan for 2013-2018

- vision statement
- restated mission
- 21st century conservation challenges
- our way of working
- 3 long-range goals
- 14 strategies to achieve goals
- 7 pages

GCPO LCC 5-YEAR STRATEGIC PLAN 2013-2018

In 2013, the GCPO LCC developed its first Strategic Plan, offering a conservation vision for the next 5 years. In developing our Strategic Plan, we used foundational documents such as our 2009 Development & Operations Plan, as well as guidance from our Steering Committee to formulate the highest priorities for the GCPO LCC over the next 5 years. The plan describes the challenges facing all of us in achieving durable conservation in the 21st century; defines our way of working; sets long-range goals and defines strategies to achieve them.

Our three long-range goals are:

- Collaboratively identify and agree on the best and most representative examples of healthy ecosystems as priorities for conservation and management.
- Analyze impacts to degraded systems to identify the best opportunities and the best means of restoring ecosystems to health.
- Develop effective ways of managing, mitigating, and adapting to changes driven by climate and the intensive human use of land, waters and oceans.

Vision

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.

Mission

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.

THE PLANNING & SCIENCE BEHIND LARGE-SCALE CONSERVATION

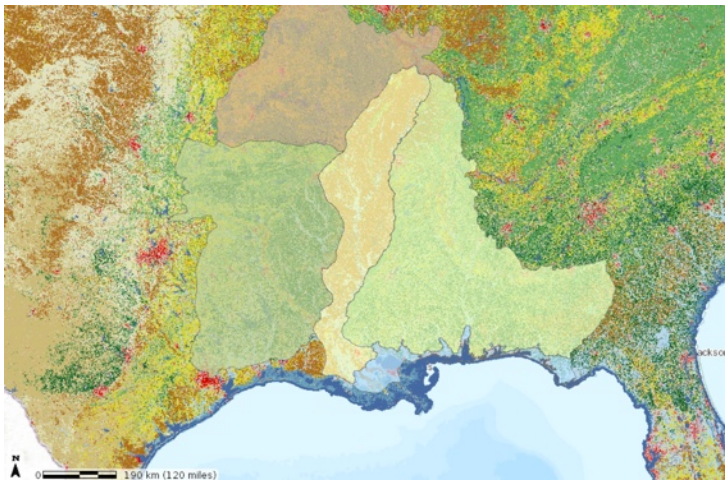
Landscape Conservation Cooperatives seek to conserve forests, mountain ranges, and river systems sufficient to provide the clean water, fresh air, fish, wildlife, working lands and recreational opportunities cherished by the American people. While this approach to conservation is easy to grasp and makes sense intuitively, its implementation is incredibly complex and involves many people, institutions and "moving parts." That is why LCCs were established. We could not reach our goals for the Gulf Coastal Plains & Ozarks region without the broad participation of our far-flung conservation community. In 2013, experts from all over our region participated in the development of a Strategic Plan, Science Agenda, the LCC's first Request for Proposals, and a growing number of new and ongoing collaborative projects.

The GCPO LCC Science Agenda: toward a comprehensive conservation design

The Adaptation Science Management Team (ASMT), composed of a diverse set of 38 experts drawn from throughout the GCPO region, met regularly beginning in fall 2012 through the summer of 2013 to develop the GCPO LCC Integrated Science Agenda. The role of the ASMT is to address the technical aspects of integrating priorities across resource perspectives and incorporating future change into current conservation planning. The Science Agenda identifies the technical challenges and an initial subset of priority science needs required for the LCC to meet its goal of landscape conservation design for a 180-million-acre region.

Biological Planning: Development of Landscape & Species Endpoints

Biological planning is a necessary first step towards conservation design that establishes common geographic and ecological frames of reference and associated targets for conservation. Early on, the GCPO LCC Geomatics Working Group established five subgeographies that collectively comprise the Gulf Coastal Plains & Ozarks: the East Gulf Coastal Plain, the Ozark Highlands, the Mississippi Alluvial Valley, the West Gulf Coastal Plain, and the Gulf Coast. Within this geographic framework, the GCPO LCC has adopted the "Broadly Defined Habitat Types" outlined by NatureServe and the U.S. Fish and Wildlife Service as a habitat framework.



Defining desired states for each priority habitat type in terms of specific endpoints is a top priority of the GCPO LCC. The ASMT defined endpoints hierarchically, focusing on landscape endpoints representing the amount, configuration, condition, and temporal aspects of habitat types, as well as species that were limited by these "desired" habitat characteristics (see Science Agenda Appendix I).

Science Need Themes for Strategic Design

The ASMT recognizes that identifying ecologically desirable states for these habitat types is only the beginning of strategic conservation design. Conservation and management take place in the context of real world issues, such as climate change and intensifying land use - especially important in a region dominated by private land ownership. Strategic design, therefore, must incorporate additional key elements related to human dimensions, decision context, and an accurate understanding of how habitats influence species. The list of needs required by the GCPO LCC for its strategic conservation design were summarized in seven science need themes:

1. Defining desired states for each priority habitat type in terms of specific endpoints.
2. Clearly documented species-habitat models that quantify relationships between indicator species and limiting factors reflecting desired states for each habitat type are needed.
3. Identification of goods and services that can serve as indicators of desired economic and cultural states for each habitat type is also needed.
4. The ability to characterize and reconcile the full suite of goods and services that may be derived from alternative landscapes that differ with regards to the amounts, configurations, and conditions of different habitat types is needed.
5. A current assessment of the amount, configuration, and condition of priority habitat types (as well as the goods and services they provide) is needed.
6. Identifying the prominent drivers of system change for each subgeography and the specific pathways by which they are likely to "stress" the system (either positively or negatively) is needed to reduce the complexity inherent in the real world to a manageable, comprehensible, and ultimately useful subset that can be explored effectively as alternative futures.
7. A need to better define the contexts for a variety of decisions faced by managers.

The Science Agenda is meant to enable our partners to see and understand how their needs fit and are met within the LCC and also to guide the investment of our resources. In 2013, for the first time, some of our financial resources were invested by issuing a GCPO LCC Request for Proposals. The results of LCC-sponsored research, as well as the work of innumerable others, will prepare the ground for our 2014-15 initiative to conduct terrestrial and aquatic assessments of the entire GCPO region and develop the first iteration of our conservation blueprint.

Request for Proposals Process & Response

The RFP was vetted by the Partnership Advisory Council and the Steering Committee prior to its release and made up to $1.75 million in funds available, with up to $350,000 possible for each research topic. Various modes of information dissemination were used to encourage a broad response to the RFP, including the http://gcpolcc.org and the national http://lccnetwork.org websites and a recorded webinar Q&A session. Numerous consultations were made with prospective PIs to ensure proposals were relevant to the GCPO LCC's needs and competitive in the review process.

The science need themes identified in the GCPO LCC's Science Agenda provided the focus for our GCPO LCC 2013 RFP Targeting High Priority Knowledge Gaps. The RFP focused on a subset of science need themes, defined as the five research topic areas described below. We received an excellent response from the research community, with 78 proposals submitted for a total "ask" in excess of $17 million (potentially leveraging >$28.8 million), broken down as follows:

- Integrating Multi-disciplinary Conservation Goals: 12
- Evaluating Species and Landscape Endpoints: 25
- Characterization of Flow: 6
- Economic and Cultural Indicators: 11
- Addressing Science Needs from the Science Agenda: 24

Five topic area Review Teams totaling 33 reviewers conducted the proposal review process (the GCPO LCC Science Coordinator and Science Liaison reviewed all proposals). All reviewers signed a "Reviewer Conflict of Interest and Confidentiality Agreement" and used a standard ranking criteria and rubric to score proposals. Reviews were compiled and shared anonymously and then discussed in a series of calls for each Review Team. The first calls narrowed the full suite of proposals down to a priority subset and identified key questions for PIs to address before making final recommendations. Follow-up calls reviewed feedback from PIs and culminated in recommendations to the GCPO LCC Steering Committee for project funding.

Ultimately, the Steering Committee approved a portfolio of 9 projects covering the five topic areas, awarding a total of $1,483,344.

GCPO LCC 2013 RFP Project Overview

Integrating Multidisciplinary Conservation Goals

McGowan et al. "Grassland habitat management for diverse taxa and stakeholders" $77,110.

Riffell et al. "Open pine habitat: Desired ecological states provided by managed forests" $91,368.

Evaluating Species and Landscape Endpoints

Conner and Smith. "Using wildlife habitat models to evaluate management endpoints for open pine woodland and savanna" $132,104.

Murrow et al. "GCPO LCC Black bear habitat assessment with associated landscape endpoints" $50,831.

Robinson and Davis. "Advancing science-based aquatic resources of the GCPO LCC region" $170,000.

Characterization of Flow

LaFontaine et al. "Assessment of water availability and streamflow characteristics in the Gulf Coastal Plains and Ozarks Landscape Conservation Cooperative for current and future climatic and landscape conditions" $349,787.

Economic and Cultural Indicators

Grala et al. "Assessment of ecosystem service value and program delivery options: Establishment of a scalable model for understanding landowner engagement opportunities" $227,148.

Addressing Science Needs from Science Agenda

He et al. "Changes in forested landscapes of Gulf Coastal Plains and Ozarks under alternative climate and urban growth scenarios" $259,500.

White et al. "Developing and applying desired forest condition metrics to enhance wildlife habitat and biodiversity within Southern 'open pine' ecosystems" $125,496.

OVERVIEW OF GCPO LCC OPERATIONS & PROGRESS

Steering Committee and Partnership Advisory Council Meetings

In 2013, the GCPO LCC Steering Committee formally met twice, with an additional four meetings online. A Strategic Plan subcommittee met online three times in the spring, culminating in unanimous approval of the final Strategic Plan in August. GCPO LCC staff subsequently held a meeting in Starkville, MS to develop a draft annual work plan that identifies priority work activities flowing from the Strategic Plan and assigns responsibilities.

The GCPO LCC Partnership Advisory Council also met twice online during the year: in April to update one another and increase coordination on projects and in November to provide recommendations concerning the proposed list of RFP projects for funding. Flexible use of web meeting technology has allowed regular communication, presentations, coordination and decision-making while avoiding travel costs.

Spring 2013 Steering Committee (SC) meeting held in conjunction with the Southeast Aquatic Resources Partnership (SARP)
Memphis, TN
Theme: Creating Synergy Across Partnerships in the GCPO Region

- The Steering Committees of both the GCPO LCC and SARP supported moving forward on a formal declaration of collaboration between both groups to increase integration of their respective science and delivery functions.
- Adaptation Science Management Team directed to continue developing the RFP and working on the Science Agenda.
- Four SC members volunteered to review RFP proposals.
- Strategic Plan comments provided; final by August 2013.
- SC approves (in two weeks subsequent to meeting) letter in support of the Gulf Coast Draft Initial Comprehensive Plan addressed to the Gulf Coast Ecosystem Restoration Council.

Steering Committee Members
Alabama Department of Conservation and Natural Resources

American Bird Conservancy*

Arkansas Game and Fish Commission

Auburn University*

Ducks Unlimited

Florida Fish and Wildlife Conservation Commission

Kentucky Department of Fish and Wildlife Resources

Louisiana Department of Wildlife and Fisheries

Mississippi Department of Wildlife, Fisheries, and Parks

Mississippi State University

Missouri Department of Conservation

National Bobwhite Conservation Initiative

National Oceanic and Atmospheric Administration

National Park Service

Oklahoma Department of Wildlife Conservation

Tennessee Wildlife Resources Agency

Texas Parks and Wildlife Department

The Conservation Fund*

The Nature Conservancy

US Army Corps of Engineers

U.S. Fish and Wildlife Service

US Forest Service

US Geological Survey
*non-voting member

Fall 2013 Steering Committee meeting held in conjunction with SEAFWA

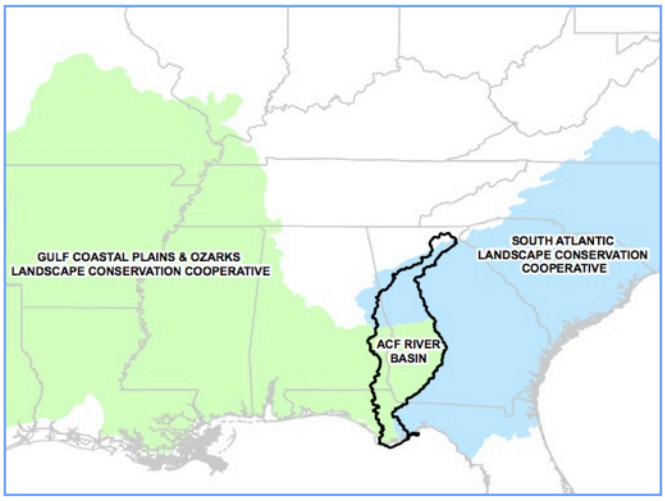
Oklahoma City, OK

Theme: Strengthening the Scientific Foundation of the GCPO LCC in Defining the Conservation Landscape of the Future

Due to the partial federal government shutdown, no official decisions were made at this meeting. Attendees discussed the Strategic and annual work plans, communications, a proposal for SARP to assist in coordinating the Southeast Conservation Adaptation Strategy, and a letter of support concerning the National Fish, Wildlife, and Plants Conservation Adaptation Strategy. Paulette Blanchard, an Absentee Shawnee who has been working with the South Central Climate Science Center to organize a series of Intertribal Workshops about perceptions of climate change showed a 5-minute video of interview vignettes from these meetings, which the Steering Committee found of great interest.

Other major Steering Committee decisions

In January 2013, the SC considered and decided among alternatives for handling partnership and coordination in the Appalachicola-Chattahoochee-Flint River Basin (ACF Basin), which spans three states and two LCCs and has sensitive water rights issues:



✦ A facilitator from the USFWS helped with a structured decision making (SDM) process on the ACF, with an objective to maximize planning effectiveness and partner satisfaction.

✦The GCPO LCC SC recommended that the South Atlantic LCC (SALCC) take the lead on ACF conservation planning without a boundary change, while coordinating with the GCPO LCC on issues that affected the ACF. This decision was mutually supported by the SALCC, and represents a good example of cross-LCC coordination.

In April 2013, the SC approved:

✦Rollout of the Conservation Planning Atlas, April 17, 2013

✦Relaunch of the http://gcpolcc.org website April 6, 2013

In November 2013, the SC approved:

✦the final portfolio of science projects to be funded by the GCPO LCC RFP

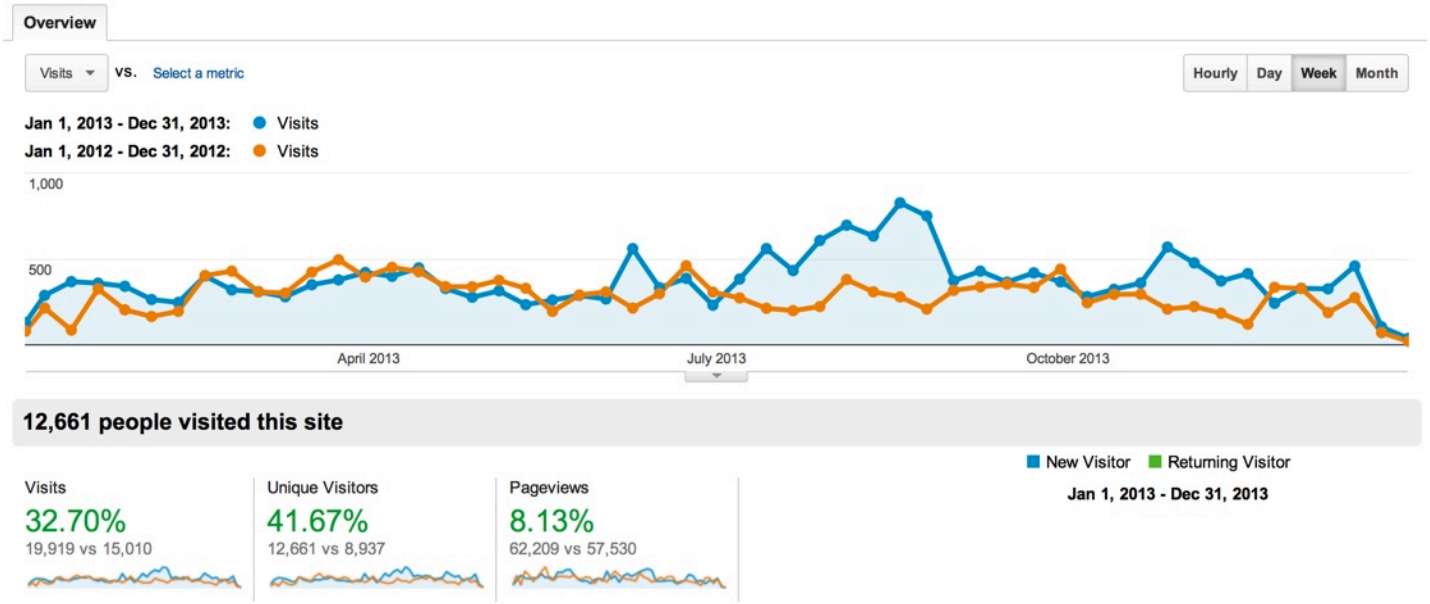
✦a letter in support of the National Fish, Wildlife and Plants Climate Adaptation Strategy

Partnership Advisory Council Members

- Central Hardwoods Joint Venture
- East Gulf Coastal Plain Joint Venture
- Gulf Coast Joint Venture
- Gulf of Mexico Alliance
- Lower Mississippi Valley Joint Venture
- Lower Mississippi River Conservation Committee
- Southeast Aquatic Resources Partnership
- Southeast Bat Diversity Network
- Southeast Partners in Amphibian & Reptile Conservation

Communications Highlights

In April 2013, in response to input from our conservation community, the GCPO LCC launched a redesigned http://gcpolcc.org website. Before the launch, LCC communications staff worked in consultation with the USFWS Region 4 staff to identify a suite of google analytics metrics by which to measure traffic and ongoing response to website content. Goals of the redesign were to improve navigability, provide access to new web-based tools, and focus more selectively on news and events with relevance to the LCC.



Overall, as our web community has continued to grow, totaling 977 at year's end, our website traffic has steadily increased, with a 33% increase in visits from 2012 to 2013 and a 42% increase in unique visitors. Google analytics comparing 3 months pre- and post-launch of the redesigned website showed a 29% increase in visits and a 29% increase in unique visitors subsequent to the relaunch.

The GCPO LCC's bi-monthly newsletter, The Monitor, refocused in 2013 to highlight the LCC's and partners' work in each of our five functional roles. Newsletter campaigns provide a consistent and reliable uptick in website traffic.

GCPO Communications staff also worked closely with the East Gulf Coastal Plain Joint Venture (EGCPJV) to develop a Prescribed Fire Communications Strategy. The draft strategy is expected to be released in spring 2014. The strategy is based upon information provided during interviews of 45 prescribed fire/resource management experts throughout the East Gulf Coastal Plain, as well as guidance from the EGCPJV staff and board members concerning their mission, strengths and appropriate roles in promoting prescribed fire.

GCPO LCC Capacity

Currently the GCPO LCC has a total of 9 dedicated or affiliated staff, reflecting the broad diversity of expertise needed to help the LCC achieve its mission. These positions are based in four states and supported by four organizations: the Tennessee Wildlife Resources Agency, the US Fish & Wildlife Service, Mississippi State University, and the US Geological Survey.

Staffing changes

The GCPO LCC continued to add capacity through innovative shared positions that came aboard at the very beginning of 2013. Glenn Constant, who leads a FWS Conservation Office in Baton Rouge assumed a new role as Aquatic Liaison for the GCPO LCC. Yvonne Allen of USFWS was hired as the LCC's Aquatic Habitat Analyst to develop, disseminate, and apply geospatial information about aquatic resources. Jeff Gleason, hired as a FWS Alabama Field Office Endangered Species Biologist, also began serving as Science Liaison to the LCC. In addition, the USGS Advanced Application Laboratory at the National Wetlands Research Center began providing project support on an as-needed basis via contract.

Unfortunately, 2013 was also a year of loss, as Alexis Londo, Geomatics Coordinator, moved to Ohio and Laurie Rounds, Gulf Coast LCC Liaison, moved to another position based on the Gulf Coast. They are both missed. The Geomatics Coordinator position will be refilled in 2014. All four LCCs and NOAA are working with the Northern Gulf Institute to fill the Gulf Coast LCC Liaison position.

Dedicated & Affiliated Staff

Greg Wathen, Coordinator – Tennessee Wildlife Resources Agency

Dr. John Tirpak, Science Coordinator – US Fish & Wildlife Service

Dr. Mike Osland, Research Ecologist – US Geological Survey

K. Gregg Elliott, Communications & Outreach Specialist - K Gregg Consulting

Janet Ertel, NWRS Inventory & Monitoring Coordinator for the GCPO geography and Region-wide Deputy Branch Chief - US Fish & Wildlife Service

Taylor Hannah, Graduate Student - Mississippi State University

Glenn Constant, Aquatic Resource Specialist for the GCPO geography and Baton Rouge Fish & Wildlife Conservation Office Project Leader - US Fish & Wildlife Service

Dr. Jeffrey S. Gleason, Science Liaison - US Fish & Wildlife Service, Alabama Ecological Services Field Office

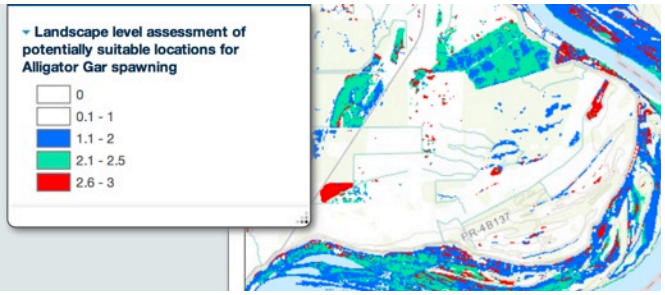
Yvonne Allen, Aquatic Habitat Analyst - US Fish & Wildlife Service

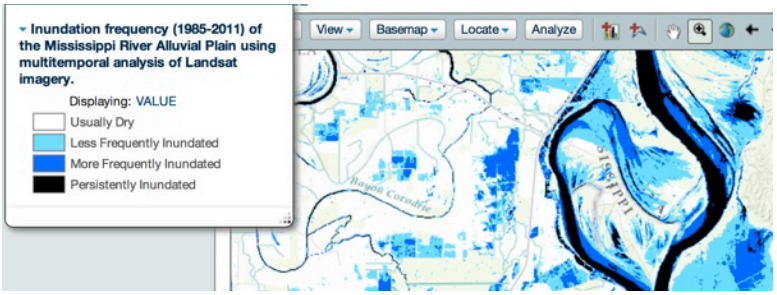
GCPO LCC
PRODUCTS & TOOLS

The following products have been developed to support land managers and other conservation practitioners. These tools, which are or will be accessible online, provide various means of visualizing, analyzing, and organizing data that helps to guide and prioritize conservation activities within a large, landscape context.

Alligator gar Habitat Suitability Index identifies potential spawning habitat

River floodplain ecosystems are extremely valuable in supporting water quality, wetlands, and fisheries - yet, on a large scale, aquatic systems are far more difficult to assess than terrestrial systems. The extent of floodplain inundation and associated water temperatures can, however, be measured using satellite imagery captured at a variety of river stages.





Working in collaboration with Baton Rouge Fish and Wildlife Conservation Office, St. Catherine's Creek National Wildlife Refuge, Private John Allen National Fish Hatchery, the Southeast Aquatic Resources Partnership, and the US Fish & Wildlife Service Inventory & Monitoring Program, the GCPO LCC has developed a Habitat Suitability Index (HSI) for alligator gar, a popular gamefish and apex predator species of the lower Mississippi River and tributaries. This project applies new remote sensing techniques combined with ground-truthing from field data on water quality and gar habitat preferences.

The alligator gar HSI and its three constituent data layers are hosted on the CPA:

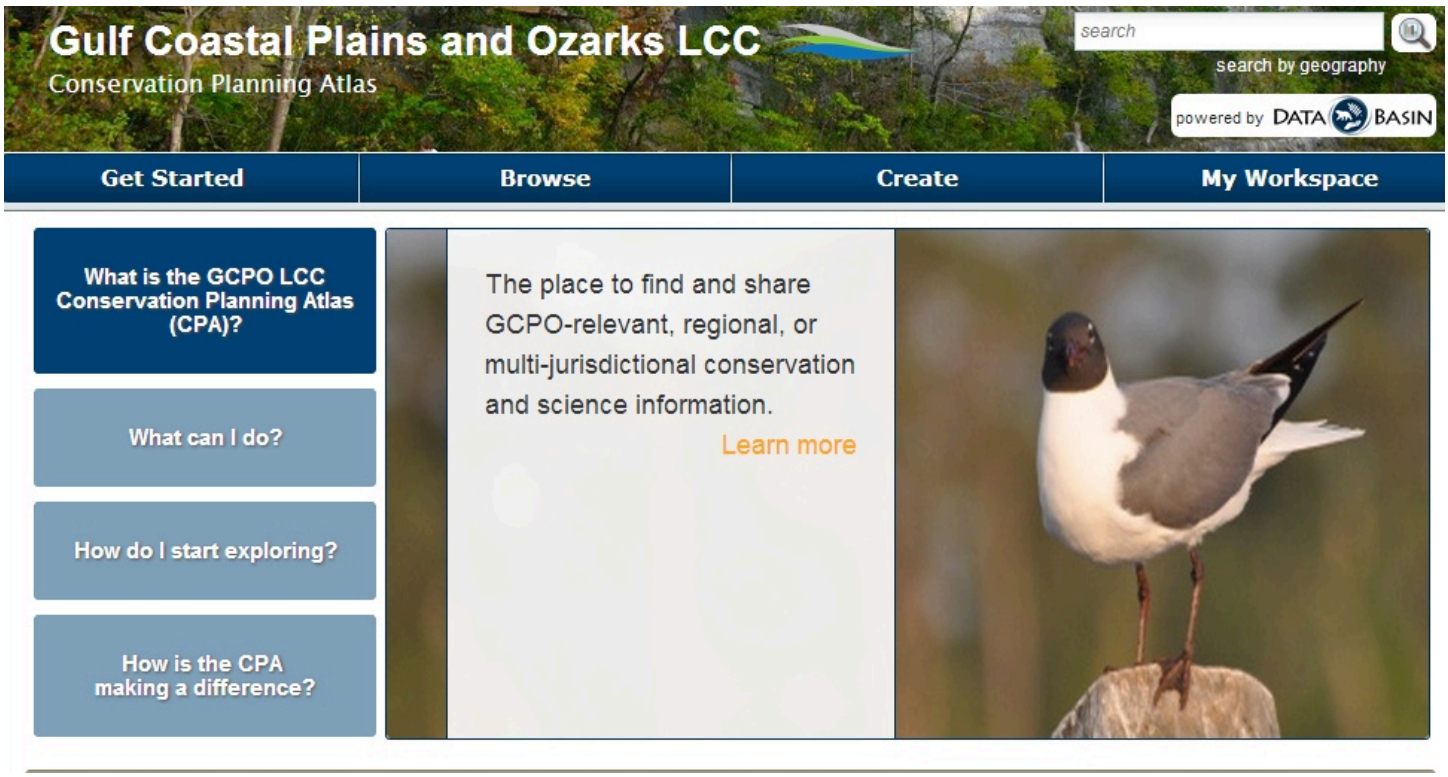
- inundation frequency (1983-2011) of the Lower Mississippi River Corridor using multitemporal analysis of Landsat imagery;
- average temperature difference (degree C) from the Mississippi River temperature, Lower Mississippi River Corridor;
- 2012 USDA Cropland Datalayer clipped to Lower Mississippi River Corridor;
- Habitat Suitability Index for Alligator Gar Spawning within the Lower Mississippi River Corridor.

The HSI can characterize the availability, suitability, and spatial distribution of aquatic habitat for gar - and eventually other aquatic species - throughout the Lower Mississippi River floodplain. The USFWS has already funded work to evaluate similar habitat relationships among a broader suite of fish species, and the GCPO LCC intends to work with other partners to extend this analysis to more species that also respond significantly to temperature, inundation frequency or land cover type - for example, cypress, black bear and ground-nesting birds.

Conservation Planning Atlas - a simple GIS for those without GIS

Spatial data is becoming ever more important to land managers who do not always have Geographic Information System (GIS) expertise or access to technical support. The Conservation Planning Atlas (CPA), built specifically for land managers and planners, came online in 2013. It is a basic spatial visualization tool that does not require GIS expertise or software to use, and it is accessible even to those working in remote rural locations with slow internet speeds. Four CPA portals serve the Gulf Coastal Plains & Ozarks LCC, the South Atlantic LCC, the Gulf Coast Prairie LCC and the Southeast region. The CPA is supported by LCC staff who search out, assess and synthesize data that are most compatible and relevant to conservation practitioners:

- CPA Galleries recommend combinations of datasets for subgeographies or specific to key conservation issues or taxa.
- The map function offers pre-existing combinations of data layers appropriate to serve as an all-around base map for each region.
- The searchable list of datasets has been whittled down by the expert CPA team to recommend the most relevant and useful data layers for each respective region.



SLEUTH urban growth models help planners proactively anticipate the future

Rapid urbanization is a major challenge to developing long-term conservation strategies in the Southeast US. This project, completed in 2013 with support from the GCPO LCC, provides SLEUTH model urban growth projections for the entire GCPO region through the year 2100. Hosted on the Conservation Planning Atlas as Projected urban growth in the Southeast region, this project provides a heretofore unavailable level of detail to conservation planners, urban planners and land managers. By understanding where urban growth is likely to occur under existing conditions, they can either "change the future" by modifying future development or adapt by refocusing conservation efforts.

Forest Characterization Database connects forest managers' habitat data

Forest managers across MS, TN, LA, AR, and eastern TX are excited about the new Forest Characterization Database because it will give them custom tools to collect, store, and analyze habitat data that is important for wildlife - a capability lacking in commercial forestry software. The program is being designed to conduct the kind of analysis that will recommend forest treatments to achieve desired forest conditions for wildlife in various forest types. With leadership, technical expertise and funding support from the GCPO LCC, the database is being designed as a networked system that allows managers to share, compare and graphically visualize data at a large scale - something that is essential to achieve the greatest benefit for wildlife. Finally, the database will help make the final turn of the adaptive management cycle: land managers will collect information that helps scientists test assumptions about forest ecosystems.

Land Cover Database provides uniform scientific description of entire GCPO region

Conserving large connected areas that encompass whole river systems and forests begins with a shared understanding of natural resource conditions as well as a shared vision for conservation - all of which is based on shared knowledge. One of the first projects of the GCPO LCC, hailed by many partners, was to address the inconsistent, insufficient and out-of-date land classification data for the region. By creating a complete, seamless and consistent Land Cover Database (LCDB), using nationally accepted land cover classification systems and making it available online, the GCPO LCC is providing a foundational requisite for large-scale conservation science and planning. The LCDB is also designed to address land cover change and dynamics by incorporating change monitoring capabilities.

BEYOND LCC BORDERS

Climate Science Center Collaboration

Landscape Conservation Cooperatives (LCCs) are primary partners and stakeholders of the Department of the Interior's Climate Science Centers (CSCs). CSCs develop decision-focused research, information products, and tools related to climate change and its anticipated effects on the landscape. The GCPO LCC region overlaps with the focal areas of three Climate Science Centers (CSC): The South Central CSC, the Southeast CSC, and the Northeast CSC.

The GCPO LCC Coordinator and Science Coordinator ensure that the LCC's work is coordinated with our respective CSCs via consultation to formulate research priorities, integrate research projects, and connect scientists working on related topics. Examples in 2013 include:

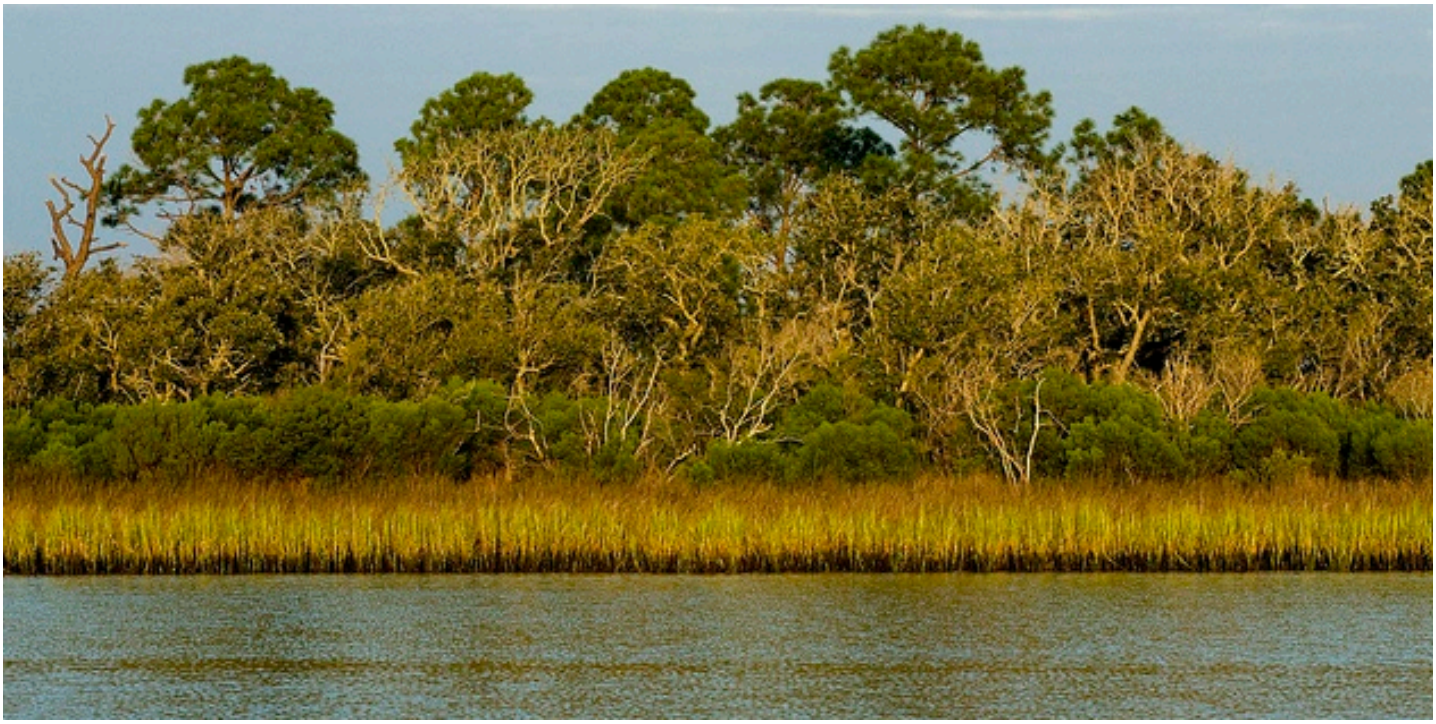
- the South Central CSC is funding the GCPO LCC's "Macroclimate effects on Gulf coastal marshes" project;
- the Northeast CSC is funding "Changes in forested landscapes of central United States under alternative climate scenarios," which will yield a synthesis incorporating our work in the Central Hardwoods region;
- the Southeast CSC is funding "Development of a SECAS conservation decision guidance library," which will illuminate and guide the process of developing a coordinated conservation approach across the Southeast.

Southeast Conservation Adaptation Strategy (SECAS)

The ecological systems upon which fish and wildlife depend are changing, subject to a lengthening list of pressures such as sea level rise, urbanization, habitat fragmentation and exotic species. Government agencies with static or declining budgets hold public lands and associated fish and wildlife species in trust for the benefit of current and future generations. Along with natural change, technical advancements in conservation theory, decision theory and the digital revolution are creating opportunities for transformative change in the way conservation is done. For these reasons, the Southeast Association of Fish & Wildlife Agencies, the Southeast Natural Resources Leadership Group, six Landscape Conservation Cooperatives and the Southeast Climate Science Center initiated the Southeast Conservation Adaptation Strategy (SECAS). SECAS is a collaboration to define the 2060 conservation landscape needed to support fish, wildlife and other natural and cultural resources in the Southeastern US and Caribbean.

In 2013, a total of 27 designated representatives from state and federal agencies, LCCs and CSCs worked together to establish a purpose, responsibilities and key goals, including:

1. Build a southeast fish and wildlife habitat network.
2. Facilitate development of an integrated monitoring network to assess and report the "State of the Southeast Conservation Landscape" over time.
3. Improve interagency and inter-organizational collaboration.
4. Find quick "wins" to illustrate the efficacy of the SECAS concept.
5. Promote a Southeast Conservation Summit that engages non-traditional partners and landscape-changing stakeholders.



National and Regional Initiatives

The GCPO LCC has led and collaborated in a number of multi-LCC and national LCC projects in 2013 (see details in Project Highlights):

- ✦ Evaluating wetland migration along the Gulf of Mexico under alternative sea level rise and urbanization scenarios
- ✦ Standardizing and coordinating range-wide monitoring of the Interior Least Tern and its habitat in a metapopulation context
- ✦ Integrating approaches to conservation design across the LCC Network in the East.
- ✦ Summary and initial evaluation of enduring features information for the conterminous USA, with evaluation of potential use for ecoregion assessment
- ✦ The Mississippi River – Planning a corridor for life, Structured Decision Making workshop
- ✦ NCTC toolbox boot camp

The GCPO LCC Science Coordinator is also participating in the national Science Coordinator Leadership Team, assisting in development of the biological planning and design portions of a national Science Agenda for the national LCC network.

PROJECT HIGHLIGHTS & SUMMARIES

The following project descriptions provide insight into the types of work that the GCPO LCC is engaged in to support its Strategic Plan and Integrated Science Agenda. These projects are categorized according to the Science Agenda's seven science need themes; however, they do not represent a full accounting of LCC activities. The totality of LCC efforts to address all seven of our science need themes includes ongoing coordination and communication activities and products from our working groups, partner initiatives throughout the GCPO, and the 2013 RFP approved projects - not summarized here, as they will begin implementation in 2014. Seven out of nine RFP projects will address science need themes 1-4, whereas the projects detailed below predominantly address science need themes 4-7. Some of these projects were initiated in 2013 and others are ongoing; not all have been funded by the GCPO LCC, but all have received significant investments of staff time and LCC resources.

Plan for alternative future landscapes that differ with regards to amount, configuration and condition of different habitat types

Evaluating wetland migration along the Gulf of Mexico under alternative sea level rise and urbanization scenarios

People in the Gulf Region recognize that coastal wetlands powerfully influence their vibrant culture by providing benefits such as clean water, fish and wildlife habitat, recreation, storm protection and carbon sequestration. The nation's third draft National Climate Assessment predicts that virtually the entire Gulf Coast will be vulnerable to sea level rise in the 21st century, threatening coastal wetlands. With support from a 2013 multi-LCC grant, four Gulf Region LCCs led by the GCPO LCC (also Gulf Coast Prairie, Peninsular Florida, and South Atlantic) are partnering to develop a decision support tool that will identify where future coastal wetlands are likely to persist and where they are likely to be lost under various scenarios of both sea level rise and future urbanization. Gulf managers and planners can use the tool to minimize the future loss of tidal wetlands; help Gulf communities make the best use of restoration funding; and allow for urban growth while protecting natural defenses.

Current assessment of the amount, configuration, and condition of priority habitat types

Standardizing and coordinating range-wide monitoring of the Interior Least Tern and its habitat in a metapopulation context

The endangered Interior Least Tern (ILT) is a small bird with a big influence on the way large rivers are managed across the central U.S. The ILT is patchily distributed across 18 states, reflecting the distribution of its preferred sandbar habitat. With support from a multi-LCC grant in 2013, the GCPO LCC is partnering with four LCCs (the Great Plains, Plains and Prairie Potholes, Gulf Coast Prairie, and Eastern Tallgrass Prairie and Big Rivers) as well as the U. S. Army Corps of Engineers, U.S. Fish and Wildlife Service, U.S. Geological Survey, and American Bird Conservancy to develop standardized range-wide monitoring protocols for both the ILT and its habitat. Anticipated outcomes include the ability to assess population trends of the ILT and other river-dependent species as well as the ability to monitor species responses to habitat management.

Current assessment of the amount, configuration, and condition of priority habitat types (continued)

Acoustical bat surveys in the Southeast

In 2013, The U.S. Fish & Wildlife Service Region 4 National Wildlife Refuge System Inventory & Monitoring Network (I&M) continued to coordinate acoustical bat monitoring for the second year, in concert with the GCPO LCC. The Southeast's 20 species of insectivorous bats commonly rely on pine or hardwood forest habitats and provide valuable pest control benefits to agriculture. Under a shared protocol across 45 USFWS field stations, 64 unique routes were sampled repeatedly for 183 samples across 10 states, obtaining the identification of ~7680 bat calls and thirteen bat species. These data are establishing species baselines for each location. I&M is currently summarizing these data across the study area, and in the coming year anticipates contributing these data to that of partner organizations for use in landscape population assessments. This program may ultimately yield insights on landscape level population changes or shifts in species distributions in a future characterized by conditions such as climate change, expanding urbanization, wind development and White-nose Syndrome.

Summary and initial evaluation of enduring features information for the conterminous USA, with evaluation of potential use for ecoregion assessment

It is often assumed that species distributions are primarily controlled by climate. Now, climate change is increasing the uncertainty of future climatic patterns and species responses. Therefore, enduring features of the landscape - such as geological type, elevation or bedrock - are appropriate targets for conservation. No nationally available enduring features datasets have been evaluated for the purpose of conservation planning. Sponsored by the GCPO LCC plus 6 more eastern LCCs and the Desert LCC, researchers will access several nationally-available enduring features data layers to summarize and evaluate the information. They will produce a national, spatially-explicit analysis and map of enduring features hotspots, and an evaluation of how well enduring feature types are conserved for each ecoregion across the nation (i.e. a national GAP-style analysis of enduring features).

Glade conservation assessment for the Interior Highlands of the Central Hardwoods Region

Glades are open, rocky, barren areas with shallow soils that support unique communities of drought-adapted flowers, warm-season grasses, and specialized animals. Disturbances over the past 200 years have had damaging effects on fragile glade soils and their distinctive species, fostering a trend toward biotic homogenization. The Central Hardwoods Joint Venture's Glade Conservation Assessment is a collaborative effort with the LCC and eight states to document the status and distribution of 24 distinct glade ecosystems and their associated species in the Central Hardwoods region. This Assessment is a necessary first step in identifying those glade complexes that have greatest potential to satisfy the needs of a broad suite of species that depend on glades for their survival.

Identify the prominent drivers of system change for each subgeography and their specific pathways of "stress"

Macroclimate effects on Gulf coastal marshes

This research will examine and forecast the effects of changes in rainfall and temperature on wetlands in the Gulf of Mexico. With funding from the South Central Climate Science Center, five researchers at US Geological Survey (USGS) National Wetlands Research Center in Lafayette, LA are collaborating to determine whether unrecognized ecological thresholds could result in dramatic change. For example, could decreased rainfall turn hypersaline wetlands dominated by succulent plants to salt pans that have no vegetation? The data products of this research will be provided to natural resource managers via a recorded webinar, a peer-reviewed publication, and a dataset hosted on the GCPO and Southeast Conservation Planning Atlas.

TN vulnerability assessment of State Wildlife Action Plan species

Natural resource managers are faced with adjusting the way they manage wildlife habitat and conserve ecosystems in the context of a changing climate. Climate change vulnerability assessments are an important tool used to anticipate which species and systems will be most affected by climate change, thus allowing for proactive management. With support from the GCPO LCC, the Tennessee Wildlife Resources Agency (TWRA) is collaborating with The Nature Conservancy to revise its Tennessee State Wildlife Action Plan before 2015. This project assessed the vulnerability of species of Greatest Conservation Need within the western TN region as a pilot for the entire state. Results indicate that mollusks and amphibians are the most vulnerable species - probably because they have limited mobility and tend to be associated with aquatic or wetland habitats that are susceptible to drying out in hotter temperatures.

NOAA Northern Gulf of Mexico Sentinel Site Cooperative

The Sentinel Site program is NOAA's approach to large scale resource management and conservation. The Northern Gulf of Mexico Sentinel Site Cooperative seeks to improve the management of Gulf coastal regions by focusing specifically on sea level rise and the potential for coastal inundation. One initial effort of the Sentinel Site Cooperative, working in collaboration with LCCs, USGS, and the Southeast Conservation Science Center, is an inventory of SETs, (Sea-surface Elevation Tables). SETs are stations that have been independently established in many places all over the world to measure the sedimentation or erosion of coastal zones at a very fine scale. This data is important to complement NOAA's extremely accurate data on water levels associated with tidal cycles and storms.

Better define the contexts for a variety of decisions faced by managers

The Mississippi River – Planning a corridor for life, Structured Decision Making workshop

Nutrient pollution is a prime contributor to the Gulf of Mexico hypoxic zone, aka the "dead zone," which negatively impacts water quality, fisheries and recreation. USGS SPARROW models have the potential to identify watersheds with the greatest need for nutrient reduction. This project seeks to apply this information by designing practices that fulfill both local conservation needs and address downstream Gulf of Mexico impacts. With support from a multi-LCC grant, the Eastern Tallgrass Prairie & Big Rivers LCC aims to link the efforts of seven LCC's, eight Joint Ventures, and six Fish Habitat Partnerships, as well as states, federal agencies and nonprofit groups. They will convene a structured decision making workshop to plan a *Greater Mississippi River Basin Fish & Wildlife Corridor* along the Mississippi, Missouri, and Ohio Rivers. The Corridor design will guide the type and location of agricultural practices that can achieve benefits to water quality, fish and wildlife; it will also serve as the major north-south fish and wildlife passage through America's plains ecosystems.

National Conservation Training Center (NCTC) toolbox boot camp

Conservation challenges are increasingly complex in scope, scale, and stakeholder involvement. For these reasons, six LCCs in the Southeast, with support from a multi-LCC grant, successfully joined forces to co-host the NCTC class, "Introduction to Structured Decision Making." This course, which will take place in February 2014, provides the skills to develop structured approaches that turn complicated decision making into a more explicit, transparent, and clear process. The target audience is scientists and managers who have a tie to making decisions or preparing decision makers on natural resource issues. This class is being offered locally and centrally in Auburn, AL to make it available to as many as possible at the lowest cost. Additionally, tuition for all partners, including non-DOI personnel, is being underwritten by this grant. Southeastern SDM instructors who are familiar with local issues will lead the class.

Improve Conservation Design

Integrating approaches to conservation design across the LCC Network in the East

Cross-boundary integration and synthesis of landscape conservation design efforts across LCCs is essential for achieving the national LCC Network's vision of coordinated conservation across the United States. Yet time is running out, as design efforts are currently underway. The objective of this national LCC project is to create a roadmap outlining the hazards and quickest routes to seamless conservation design across LCCs. The research will identify opportunities and challenges in alternative methodologies for integrating design and piloting some best practices across two or more LCCs.

Ozark Highlands Comprehensive Conservation Strategy

Not all parts of a natural landscape are equally valuable to native fish, wildlife and plants. State and federal wildlife agencies must be strategic and prioritize their efforts to achieve the greatest results within their limited conservation budgets. Yet states sometime plan in isolation, and state borders infrequently coincide with natural boundaries. Missouri, Oklahoma, and Arkansas are working together to develop a comprehensive conservation strategy for the Ozark Highlands, which will also fulfill the federal mandate to update their State Wildlife Action Plans. Staff from the GCPO LCC and the Central Hardwoods Joint Venture are providing geospatial and conservation planning support. The wildlife agencies of these three states aim to demonstrate how to plan conservation at a large scale guided by ecological rather than political boundaries. Their vision is to achieve "healthy, sustainable plant and animal communities throughout the Ozark Highlands."