

## **Regional Assessment of Critical Lands and Waters (Regional CLIP) for the Cooperative Conservation Blueprint Pilot Project**

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This report summarizes an assessment of natural resource conservation priorities for the Cooperative Conservation Blueprint (CCB) pilot study region in south central and southwest Florida, extending generally from Orlando south to the Big Cypress National Preserve, and from Sarasota and Fort Myers east to Lake Okeechobee (Fig. 1). This assessment will be referred to as the Regional CLIP, in reference to the statewide Critical Lands and Waters Identification Project, or CLIP (Oetting, Hoctor, & Stys 2012). The Regional CLIP is a compilation of: 1) a regional ecological connectivity synthesis specifically for the CCB pilot study area, 2) existing statewide resource priorities from the statewide CLIP, and 3) existing local conservation priorities that have been put forward by stakeholder groups.

### **Regional Ecological Connectivity Synthesis**

The draft CCB Regional Ecological Network (REN) identifies potential priority areas for protecting a functionally connected ecological network of public and private conservation lands across the study region. It has been delineated using a combination of both state and regional GIS ecological and conservation data sets including: existing public and private conservation lands, the Florida Ecological Greenways Network, riparian buffers and networks, Florida panther and Florida black bear habitat conservation priorities, and the Babcock Moderate Connectivity Option (including the Integrated Habitat Network). The GIS data and criteria include:

- Regional Surface Water Network: Riparian corridors identified using the NHD hydrography data combined with open water and wetland areas identified with the Cooperative Landcover dataset plus ¼ mile wide natural and semi-natural buffers.
- Panther Habitat: Primary and Dispersal Zones from the USFWS; University of Tennessee panther habitat model high and moderate habitat significance areas
- Bear Habitat: FWC Strategic Habitat Conservation Areas; habitat within primary and secondary range and bear population priority conservation areas for the Highlands-Glades bear population from Tom Hoctor
- Florida Ecological Greenways Network: Critical Linkages and Priority 3 areas
- Public and Private Existing Conservation Lands
- Babcock Moderate Connectivity Option

- Only natural, semi-natural, and pasture/ranchland areas were included when they overlapped with the data/criteria above **except** all land use types were included if they overlapped with existing conservation lands or the Babcock Moderate Connectivity Option
- All of these data and criteria were combined to identify all areas that were potentially functionally connected into a Regional Ecological Network. This included spatial optimization to remove narrow connections less than 60 meters in width and also closing narrow gaps (define as 60 meters or less in width) surrounded by otherwise suitable areas.
- See Table 1 for an explanation on how these data and criteria were separated into Priority 1 and Priority 2 areas as part of the Regional CLIP dataset described below.

The REN identifies areas of opportunity for protecting a regional ecological network designed to maintain large landscape-scale ecological functions including focal species habitat and ecosystem services. This identification of ecological connectivity priority areas is a regional-scale model that identifies general opportunities. In reserve design at the landscape or site scale, areas included might be modified and widths of corridors may need to be wider, or in some cases be narrower, depending on the scale of the corridor, context, protection of functional buffers (including for both hydrology and negative edge effects), and the focal species under consideration. The two most demanding species regarding required space, corridor width, and sensitivity to intensive human activities are the Florida panther and Florida black bear, which can serve as focal species for guiding design and management of functional corridors and connectivity.

### **Statewide CLIP Data**

Because the Regional Ecological Connectivity Synthesis focuses on regional landscape corridor priorities, we wanted to assess potential additions of known natural resource priorities that might not be captured by the connectivity analysis. Such additions might include important resources that fall outside of the regional corridor network, either because they are spatially distant from priority corridors, or important small-patch resources not picked up by the landscape-level corridor analysis. For this step we relied on the statewide Critical Lands and Waters Identification Project (CLIP) Database, version 2.0 (Oetting, Hootner, & Stys 2011). We selected a subset of CLIP Core data layers for analysis, including FNAI Rare Species Habitat Conservation Priorities (FNAIHAB), Florida Fish & Wildlife Conservation Commission (FWC) Strategic Habitat Conservation Areas (SHCA), Priority Natural Communities, and Wetlands. Other statewide CLIP core data layers were not considered for this analysis, either because they were effectively captured by the regional connectivity synthesis (e.g., Florida Ecological Greenways Network or Significant Surface Waters), or because they were not considered directly relevant to the focus of the Regional CLIP analysis (e.g., Aquifer Recharge or Marine resource layers).

### Rare Species Habitat Conservation Priorities (FNAIHAB)

This data layer, commonly referred to as FNAIHAB, was created by FNAI specifically for the Florida Forever statewide environmental land acquisition program. It is intended to show areas that have a high statewide priority to protect habitat for Florida's rarest plant and animal species. The FNAIHAB model was designed explicitly to identify areas important for species habitat based on both species rarity and species richness. For the CCB Regional CLIP project, only Priorities 1-3 of this model are included in the analysis.

FNAI mapped occurrence-based potential habitat for 248 species of plants, invertebrates, and vertebrates, including aquatic species. Because land acquisition was the focus, species were included according to their need for additional habitat placed in conservation. All federally listed species were included, as well as many state listed species and several species not listed at either the federal or state levels. Suitable habitat was mapped only in the vicinity of known occurrences. Species' habitat was mapped based on remotely sensed vegetation data (FWC Landsat satellite imagery landcover and aerial photography classed into FLUCCS codes by Florida's Water Management Districts), as well as information from various species experts (FNAI 2010a).

It is important to note that the version of FNAIHAB used for CLIP differs from the original version of FNAIHAB developed for the Florida Forever program (FNAIHAB-FF). For Florida Forever, species are weighted by three factors: global rarity (G-rank), total area of habitat mapped, and percent of habitat currently protected on conservation lands. That weighting system is designed to prioritize species with regard to land acquisition. Since CLIP was intended for a broader range of potential conservation planning purposes, FNAI developed a separate weighting system involving only global and state rarity ranks (G-rank and S-rank). This weighting system was revised for CLIP version 2.0 in consultation with FNAI scientists to reflect the relative importance for conservation of various G- and S-rank combinations. The new version has substantially fewer acres in the top two priority classes, compared to CLIP 1.0.

### Strategic Habitat Conservation Areas (SHCA)

This data layer was created by FWC to identify gaps in the existing statewide system of wildlife conservation areas, and to inform ongoing land acquisition and conservation efforts. FWC modeled areas of habitat that are essential to sustain a minimum viable population for focal species of terrestrial vertebrates that were not adequately protected on existing conservation lands. Individual species potential habitat models were developed from FWC 2003 Landsat satellite imagery land cover overlaid with FNAI element occurrences, FWC wildlife observations, or other data relevant for identifying potential habitat. Individual SHCAs for each species were identified as the additional areas beyond existing conservation lands that were needed to ensure a minimum viable population for species that require additional habitat protection. Of the 62 species evaluated, 33 were identified as requiring SHCAs. The final SHCA data layer is an aggregation of the individual species SHCAs. Note that CLIP version 1.0 used an interim update completed in 2007. CLIP 2.0 uses the final SHCA update from 2009 (Endries et al. 2009), which includes four additional species – Florida salt marsh vole (*Microtus pennsylvanicus dukecampbelli*), Florida black bear (*Ursus americanus floridanus*), swallow-tailed kite

(*Elanoides forficatus forficatus*), and mangrove cuckoo (*Coccyzus minor*). With these additions, SHCA priorities 2 and 3 now cover substantially more acres (primarily due to black bear in P2 and kite in P3).

For CLIP, we used the version of SHCA that was prioritized into five classes by FWC. Priority 1 is species with Heritage ranks of S1 and G1-G3. Priority two is species with ranks of S1, G4-G5 or S2, G2-G3. Priority 3 is species with Heritage ranks of S2, G4-G5 or S3, G3. Priority 4 is species with ranks of S3, G4. Priority 5 is species with ranks of S3, G5 or S4, G4. For the CCB Regional CLIP project, only Priorities 1-3 of this model are included in the analysis.

### Priority Natural Communities

This data layer was created by FNAI specifically for the Florida Forever statewide environmental land acquisition program. It is intended to map high priority natural communities that are under-represented on existing conservation lands. FNAI mapped the statewide range of 11 natural community types: upland glades, pine rocklands, seepage slopes, scrub, sandhill, tropical hardwood hammock, upland hardwood forest, pine flatwoods, dry prairie, coastal uplands, and coastal wetlands (FNAI 2010a).

CLIP 2.0 uses Natural Communities FFCNA Decision Support Data version 3.32, which are primarily based on the Cooperative Land Cover (CLC) map developed by FNAI in consultation with FWC (FNAI 2010b). The CLC map generally identifies more acres for most of these community types. The natural communities are mutually exclusive types (any given location can be classed as only one community type), so there is no overlay model of the communities. For the CLIP analysis, the natural communities are classed by Global rarity rank (G-rank).

Since CLIP 2.0 was finalized, FNAI has further prioritized this layer within each natural community type based on landscape context. Each community type is prioritized into Very High, High, and Medium conservation priority classes. For the CCB Regional CLIP project, all sub-priorities of natural communities ranked G1-G3 are included in the analysis.

### Wetlands

The Wetlands data layer used for the CLIP analysis was developed by FNAI specifically for the Florida Forever statewide environmental land acquisition program (FNAI 2010a). The latest version used for CLIP 2.0 was based on the FNAI Cooperative Land Cover Map (FNAI 2010b). For this version, wetlands are prioritized based on the UF Land Use Intensity Index and FNAI Potential Natural Areas into six priority classes. Since wetlands are now prioritized into six classes (previously four in CLIP 1.0), the highest priorities have fewer acres. For the CCB Regional CLIP project, only Priorities 1-4 of this model are included in the analysis.

### **Prioritization of Connectivity Synthesis and CLIP Data**

Because the resources identified through a combination of the connectivity synthesis and CLIP data described above cover a relatively large portion of the CCB Pilot study area, we subdivided the data into

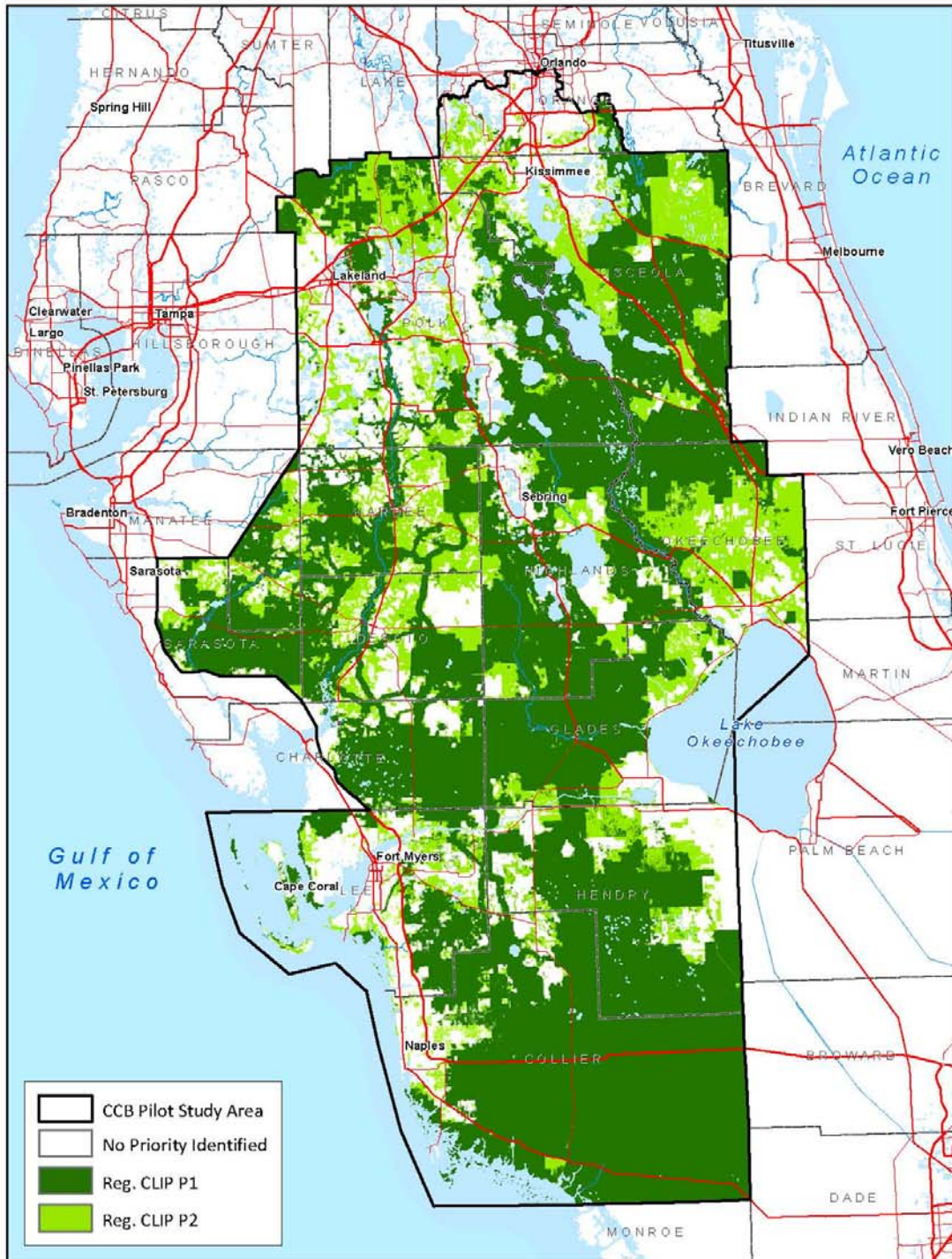
two priority classes to potentially focus conservation efforts. It is important to note that all resources identified in this study have conservation value; indeed there are additional (lower priority) natural resources identified by these data layers and other sources that were not selected for this analysis. Nearly all areas of the state outside of the most intensive development have some natural resource value.

Table 1 outlines how the regional connectivity synthesis and CLIP data layers were classed into two priorities for this analysis, and the result is shown in Figure 1. Priority 1 focuses on connectivity between major hubs of existing conservation lands in the region, while Priority 2 identifies broader areas of resource value. Together these two priority classes are known as the Regional CLIP priorities for the CCB Pilot study area.

**Table 1. Division of Data Components into Priority Classes for CCB Regional CLIP**

<p><b>PRIORITY 1</b></p> <p><i>Regional Ecological Connectivity Synthesis Components:</i>                  Panther - FWS Primary &amp; Dispersal Zones; UT High &amp; Moderate                  Bear - SHCA; HG Primary Range and PPCA bear habitat                  FEGN - Critical Linkages 1 &amp; 2; Priority 3                  Babcock Moderate Connectivity Option                  Existing Conservation Lands</p> <p><i>Statewide CLIP Components:</i>                  FNAIHAB - Priorities 1 &amp; 2                  SHCA - Priority 1                  Natcom - G1 &amp; G2 Very High or High; G3 Very High                  Wetlands - Priority 1</p>
<p><b>PRIORITY 2</b></p> <p><i>Regional Ecological Connectivity Synthesis Components:</i>                  Regional Surface Water Buffer Network                  Panther - FWS Secondary Zone; UT Low                  Bear - Primary &amp; Secondary habitat outside priority areas                  FEGN - Priorities 1 &amp; 2 outside Critical Linkages                  Integrated Habitat Network</p> <p><i>Statewide CLIP Components:</i>                  FNAIHAB - Priority 3                  SHCA - Priorities 2 &amp; 3                  Natcom - G1 &amp; G2 Medium; G3 High or Medium                  Wetlands - Priorities 2-4</p>
<p><u>Key:</u>                  FWS - U.S. Fish &amp; Wildlife Service Panther Sub-Team                  UT - University of Tennessee Panther Habitat Suitability Model                  SHCA - FWC Strategic Habitat Conservation Areas                  HG -                  PPCA -                  FEGN - Florida Ecological Greenways Network                  FNAIHAB - FNAI Rare Species Habitat Conservation Priorities                  Natcom - FNAI Priority Natural Communities</p>

### Cooperative Conservation Blueprint Regional Pilot Project CLIP Regional CLIP Priorities



UF Center for Landscape Conservation Planning  
Florida Natural Areas Inventory  
December 8, 2011

This map was developed for state and regional conservation planning purposes and identifies general opportunity areas. It is not intended, nor is it sufficient, to be the sole basis for local government comprehensive plans, environmental resource or agency permitting decisions.

Figure 1

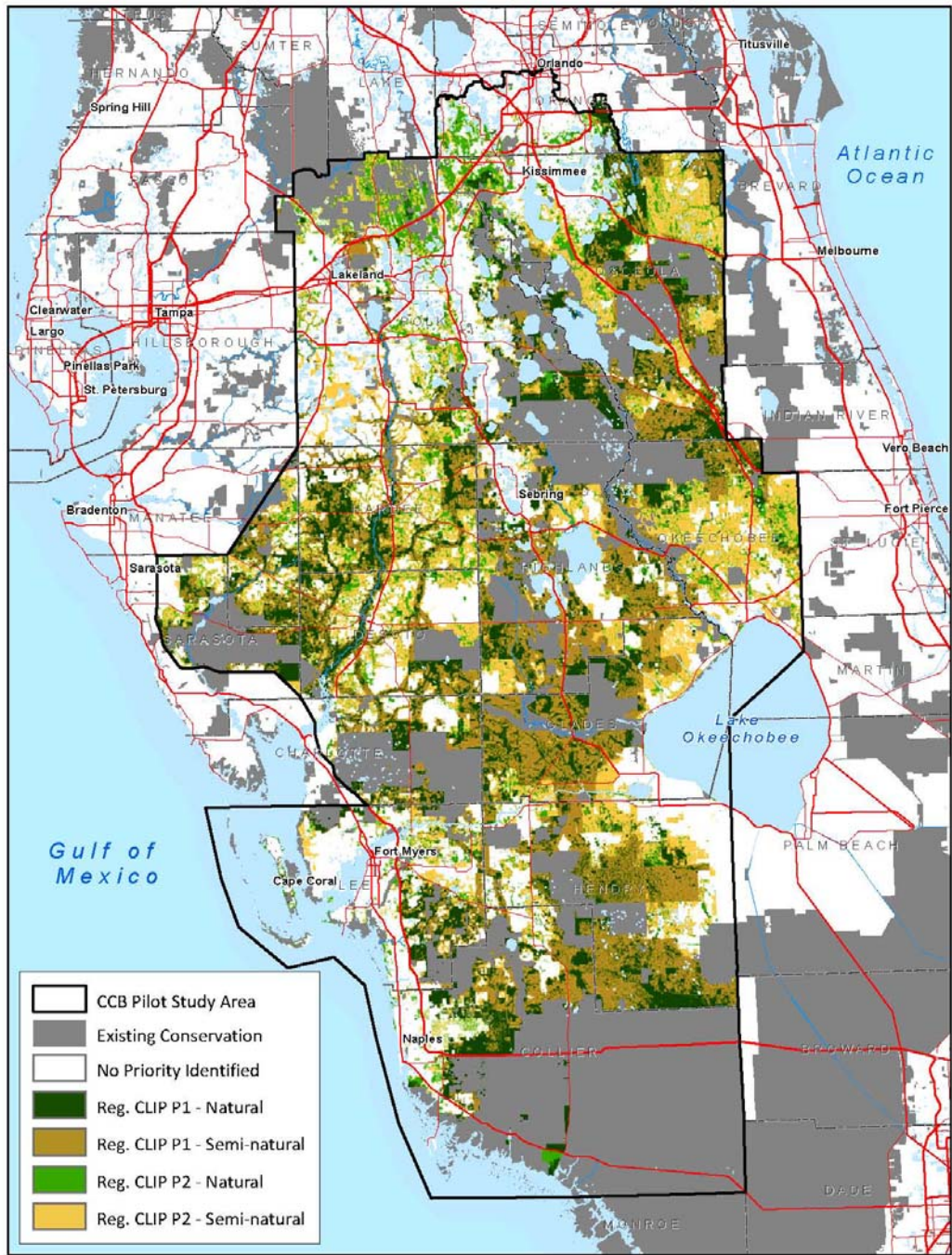
Table 2 provides an acreage breakdown of the Regional CLIP priorities. Priority 1 covers about 59 percent of the pilot region land area, and Priority 2 adds another 21 percent, for a total of 80 percent of the study area identified as conservation priority. Given that extent, it is useful to note that much of the area identified in the Regional CLIP can be classified as "semi-natural" – pasture, silviculture, and other low-intensity agricultural uses as well as a variety of low-intensity rural land uses (see also Figure 2). Many rural land uses of varying intensities are compatible with various natural resource conservation objectives. Some natural resources such as scrub, most wetlands, and various habitat specialist species require the maintenance or restoration of undisturbed natural cover or conditions. However, many natural resources and species can persist or remain viable in conjunction with some degree of human-influenced land uses. Therefore, not all lands identified in the Regional CLIP analysis need be set aside for conservation in order to achieve overall conservation goals. Under the right management conditions, lands held in private ownership for economic return can still support the long term persistence of many natural resources.

**Table 2. Land Area (in acres)  
Covered by Regional CLIP**

<b>Priority 1</b>	<b>4,656,295</b>
Natural	2,954,943
Semi-natural	1,701,352
<b>Priority 2</b>	<b>1,630,530</b>
Natural	522,604
Semi-natural	1,107,927
Total acres in Study Area: 7,913,627	

Overall, the focus of conservation efforts should be first to maintain current land uses, or even restore natural systems, across resources grouped as Priority 1. Ideally Priority 2 resources would also be maintained in current land uses, although these resources are less critical to maintaining the overall suite of ecosystem functions in the region. Note that areas important for protecting state and regional ecological connectivity incorporate lands in both the natural and semi-natural categories (as seen in Fig. 1). It is important that ecological connections across natural and semi-natural lands be carefully considered to maintain and restore functional connectivity. However, with this said, working land uses such as ranches in the CCB Pilot region are at least generally compatible with the goal of protecting regional ecological connectivity and should be treated as such in planning efforts in the region.

### Cooperative Conservation Blueprint Regional Pilot Project CLIP Regional CLIP Priorities by Land-Use Category



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Figure 2



### Additional Regional Conservation Priorities Overlay

In addition to the compilation of regional connectivity and statewide CLIP data, we recognized that several regional studies have been conducted to identify conservation priorities in the CCB Pilot study area. We wanted to acknowledge these studies as well as highlight areas included in regional or local priorities that may have been missed by the statewide/regional data. Based on presentations and workshops held with local stakeholders throughout the CCB pilot study region in the spring and summer of 2011, we identified a collection of existing conservation priority data developed by various regional and local entities (Table 3). These additional conservation priorities are shown collectively over the Regional CLIP Priorities in Figure 3. Note that the Regional/Local Conservation Priorities (described as “local” in Figure 3) map layer is partially transparent to show overlap with the Regional CLIP analysis.

<b>Table 3: Existing conservation priority datasets provided by local and regional groups.</b>		
<i>Dataset</i>	<i>Source</i>	<i>Description</i>
Charlotte County Proposed Wildlife Corridors	Charlotte County	A representation of critical linkages in Charlotte County.
CHNEP Restoration Needs Plan	Charlotte Harbor National Estuary Program	A regional conservation vision developed by CHNEP.
Collier County Rural Land Stewardship	Collier County	Represents priorities in Collier County for natural resource conservation.
ECFRPC Proposed Conservation Lands	East Central Florida Regional Planning Council	Aspirational conservation lands per ECFRPC.
Highlands County Corridors	Archbold Biological Station	Identifies portions of Highlands County valuable for ecological connectivity.
Lake Okeechobee Watershed Potential Natural Restoration Sites	U.S. Army Corps of Engineers, South Florida Water Management District.	Areas found by this study to reduce nutrient runoff to Lake Okeechobee, store water, and provide wildlife habitat were included in the Local Conservation Priorities layer.
Lee County Conservation 2020 Projects	Lee County	Represents nominations for Lee County's program to preserve environmentally critical lands.
Southwest Florida Comprehensive Watershed Plan Functional Groups	U.S. Army Corps of Engineers, South Florida Water Management District.	Functional groups identified by the Plan as priority landscape linkages were included in the Local Conservation Priorities layer.

One particularly important regional/local additional source of conservation priorities is the Southwest Florida Comprehensive Watershed Plan. The Draft Southwest Florida Comprehensive Watershed Plan (SWFCWP) originated in 2000 as the Southwest Florida Feasibility Study (SWFFS), which was authorized as a component of the Comprehensive Everglades Restoration Plan (CERP) to identify environmental problems and opportunities in Southwest Florida and develop a comprehensive watershed management plan for the Southwest Florida region. The study area covers approximately 4,300 square miles, including all of Lee and portions of Collier, Charlotte, Hendry, Glades, and Monroe Counties in Southwest Florida. This collaborative effort among federal, state, and local governments as well as public and private community organizations to coordinate resources for large-scale watershed restoration is unprecedented within the southwest Florida study region.

Southwest Florida is unique by virtue of the sub-tropical and coastal ecosystems that remain intact; the expanse of public lands of local, state, and federal interest; the prevalence of large agricultural operations that continue to support fish and wildlife resources; and the dependence of the local economy on the conservation of all of these resources. Intensive urban and agricultural development has significantly threatened the natural resources of the region. The goal of the Draft SWFCWP is to produce a regional restoration plan that addresses water resource issues within all watersheds in southwest Florida, meeting many of the area's ecological and hydrological restoration needs. The SWFCWP has developed a comprehensive regional plan of action to address the health of aquatic and upland ecosystems; the quantity, quality, timing, and distribution of water flows to the estuaries; the sustainability of economic and natural resources; flood protection opportunities; listed species protection; biological diversity; and habitat protection and restoration. Wide-ranging federal and state-listed species; such as the Florida panther, wood stork and Florida black bear, as well as migratory birds and endemic species; are prioritized in the Study's plan development and analysis, which includes a prioritized landscape connectivity plan. Significant structural components and land management strategies for water storage and management are proposed. Where feasible, protection and restoration of existing natural resources through land acquisition and conservation easement is prioritized.

The Draft SWFCWP is currently comprised of 22 Functional Groups (FGs) (grouped project areas) with approximately 374 components (individual projects). The FGs represent an effort to identify, assess, and prioritize a suite of restoration opportunities within a targeted geographic area in order to maximize potential environmental and ecological benefits. Functional groups were evaluated and ranked for importance as estuarine, landscape/sensitive lands, surface hydrology, and water quality restoration projects. The Corps and SFWMD have recommended a tiering process that identifies projects of federal interest and projects that could be implemented by other stakeholders. This process can be used as a template for future large-scale regional restoration efforts. The Draft SWFCWP was forwarded to USACE Headquarters for review in late 2011 and a 2012 public review is anticipated.

### Cooperative Conservation Blueprint Regional Pilot Project CLIP Local Conservation Priorities on Regional CLIP Priorities

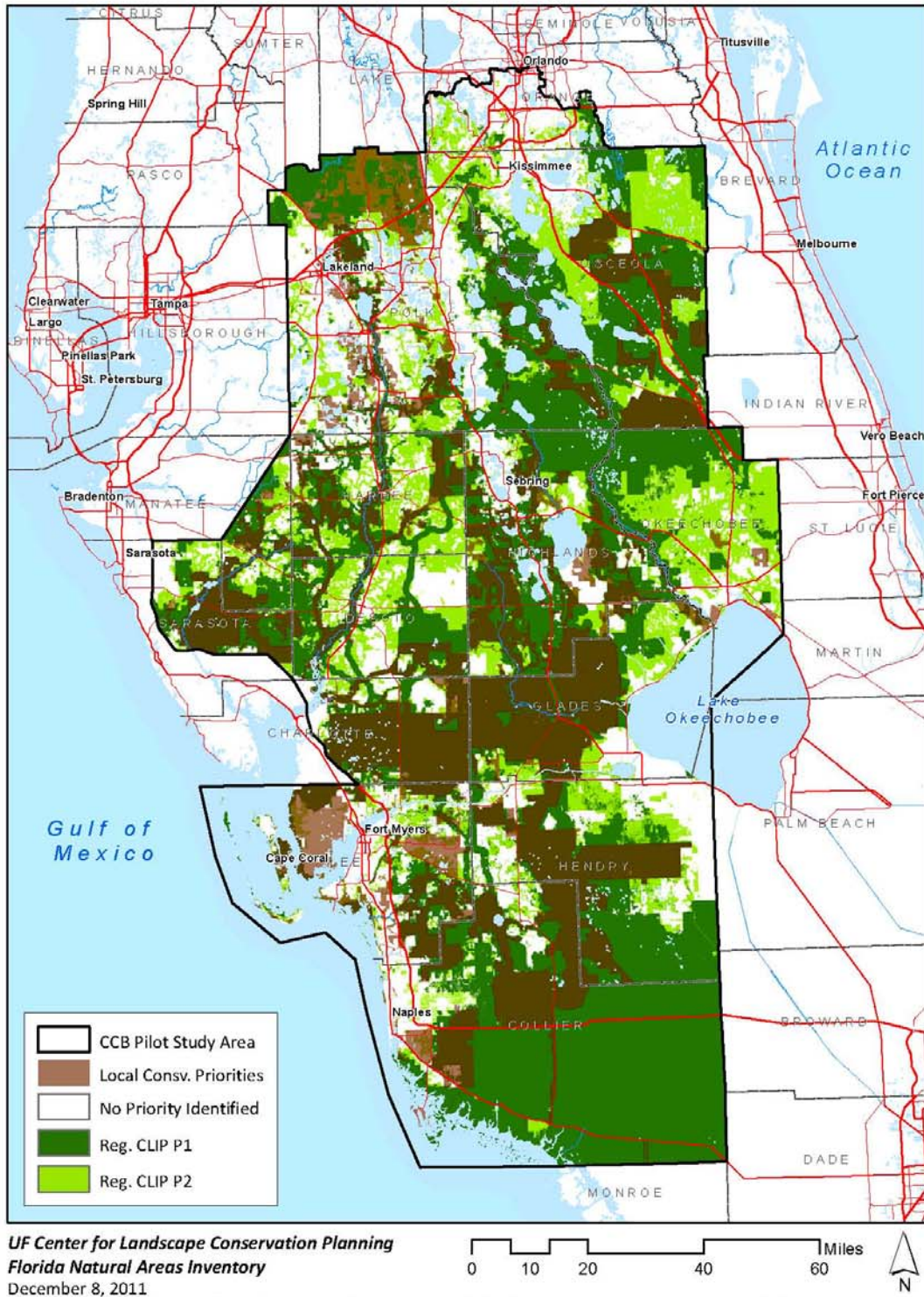


Figure 3

**Disclaimer**

The data layers included in the Regional CLIP Priorities were developed primarily for statewide and regional conservation planning purposes and identify general opportunity areas. They are not intended, nor are they sufficient, to be the sole basis for local government comprehensive plans, environmental resource or agency permitting decisions. Local site surveys by qualified professionals should always be conducted before implementing conservation actions implied by these priorities.

### References

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