

# The Southeast Blueprint Indicators

The Southeast Conservation Blueprint is based on 68 natural and cultural resource indicators that represent terrestrial, freshwater, and coastal/marine ecosystems.



## Continental

15 Southeast states + U.S. Atlantic and Gulf waters



## Terrestrial

- **East Coastal Plain open pine birds:** Identifies areas within the longleaf pine range east of the Mississippi River where open pine habitat management would most benefit 6 bird species (*source: East Gulf Coastal Plain Joint Venture - JV*).
- **Fire frequency:** Estimates the number of times an area has been burned from 2013-2021 (*source: Landsat Burned Areas, Monitoring Trends in Burn Severity*).
- **Grassland & savanna extent:** Identifies known and predicted open grasslands and tree savannas (*source: Protected Areas Database of the United States - PAD-US, NLCD, LANDFIRE, TX & OK ecological systems maps, Piedmont Prairie Partnership, Southeastern Grasslands Institute/iNaturalist, other expert-provided known sites*).
- **Grassland & savanna restoration:** Prioritizes restoration opportunities for grasslands and savannas within their historic range (*source: FL Natural Areas Inventory Longleaf Sustainability Analysis, U.S. Forest Service shortleaf pine range, Natural Resources Conservation Service - NRCS shortleaf pine suitability, grassland & savanna extent indicator*).
- **Greenways & trails:** Assesses the natural condition and connected length of recreational paths (*source: OpenStreetMap, NLCD*).
- **Imperiled mammals:** Identifies potential habitat to support mammal Regional Species of Greatest Conservation Need (RSGCN) using rarity-weighted richness (*source: U.S. Geological Survey Gap Analysis Project - USGS GAP, USGS Global Islands, NLCD*).
- **Imperiled reptiles & amphibians:** Identifies potential habitat to support herpetofauna RSGCN using rarity-weighted richness (*source: USGS GAP, NLCD*).
- **Intact habitat cores:** Measures the size of large, unfragmented patches of natural habitat (*source: Esri green infrastructure data*).
- **Landscape condition:** Represents natural areas with limited human alteration while also considering the naturalness of the surrounding landscape (*source: NLCD, LANDFIRE, global-scale mining polygons, grassland & savanna extent indicator*).
- **Mississippi Alluvial Valley forest birds - protection:** Prioritizes new areas for protection to benefit 3 forest breeding bird species that need large interior cores of bottomland hardwood habitat (*source: Lower Mississippi Valley Joint Venture - LMVJV*).
- **Mississippi Alluvial Valley forest birds - reforestation:** Prioritizes areas for reforestation to benefit 3 forest breeding bird species that need large interior cores of bottomland hardwood habitat (*source: LMVJV*).
- **Playas:** Depicts the location and condition of playas in the western Great Plains (*source: Playa Lakes JV*).
- **Potential access to parks:** Prioritizes places to create new parks to fill gaps in access to green space within socially vulnerable communities (*source: Trust for Public Land - TPL ParkServe, Centers for Disease Control - CDC Social Vulnerability Index*).
- **River cane restoration:** Identifies priority places for river cane restoration and co-stewardship near lands of federally recognized Tribes (*source: NRCS gSSURGO soils, Environmental Protection Agency - EPA estimated floodplain, PAD-US, U.S. Census American Indian Areas, National Oceanic and Atmospheric Administration - NOAA Coastal Change Analysis Program - C-CAP, stable coastal wetlands indicator*).
- **Resilient terrestrial sites:** Index depicting the ability of terrestrial sites to continue supporting biodiversity and ecosystem function in the face of climate change (*source: TNC Resilient Land*).



# Continental

15 Southeast states + U.S. Atlantic and Gulf waters



## Terrestrial (continued)

- **South Atlantic forest birds:** Evaluates habitat suitability for 12 upland hardwood and forested wetland bird species (*source: Southeast Gap Analysis Program - GAP, Designing Sustainable Landscapes*).
- **South Atlantic low-urban historic landscapes:** Assesses the degree of urban development surrounding sites on the National Register of Historic Places (*source: National Park Service - NPS, State Historic Preservation Offices - SHPOs*).
- **Urban park size:** Measures the size of parks in and near urban areas (*source: PAD-US, OpenStreetMap, U.S. Fish & Wildlife Service - USFWS realty tracts, NLCD, Census urban areas*).
- **West Coastal Plain & Ouachitas forested wetland birds:** Evaluates habitat suitability for 5 bird species within bottomland hardwood forests and riparian areas (*source: LMVJV*).
- **West Coastal Plain & Ouachitas open pine birds:** Identifies areas with existing pine trees that, if managed for open condition, could support a population of 3 pine bird species (*source: LMVJV*).
- **West Gulf Coast mottled duck nesting:** Depicts coastal marshes and grasslands in TX and LA that are important for mottled duck nesting (*source: Gulf Coast Prairie Landscape Conservation Cooperative*).



## Freshwater

- **Atlantic migratory fish habitat:** Assesses migratory fish habitat condition based on water quality, connectivity, flow alteration, and more (*source: Atlantic Coast Fish Habitat Partnership - ACFHP*).
- **Floodplain inundation:** Measures the hydrologic function of the floodplain using frequency of inundation (*source: EPA estimated floodplain, flood frequency data derived from Landsat imagery using Google Earth Engine*).
- **Gulf migratory fish connectivity:** Depicts how far upstream migratory fish species have been observed (*source: The Nature Conservancy - TNC Southeast Aquatic Connectivity Assessment Project, National Oceanic and Atmospheric Administration - NOAA critical habitat*).
- **Imperiled aquatic species:** Counts the number of aquatic Regional Species of Greatest Conservation Need observed in each watershed (*source: Southeast Aquatic Resources Partnership - SARP HUC12 species summaries, EPA estimated floodplain*).
- **Lakes & reservoirs:** Evaluates the condition of lakes and reservoirs based on the amount of natural landcover within the upstream watershed (*source: LAGOS-US LOCUS lakes, LANDFIRE, NLCD, global-scale mining polygons*).
- **Natural landcover in floodplains:** Measures the percent natural landcover in the estimated floodplain by catchment (*source: National Land Cover Database - NLCD, National Hydrography Dataset Plus high resolution - NHDPlus HR, EPA estimated floodplain*).
- **Network complexity:** Counts the number of connected stream size classes in a river network between dams or waterfalls (*source: SARP network complexity data, NHDPlus HR, EPA estimated floodplain*).
- **Permeable surface:** Measures the average percent of non-impervious landcover within each catchment (*source: NLCD, NHDPlus HR*).



# Continental

15 Southeast states + U.S. Atlantic and Gulf waters



## Coastal & Marine

- **Atlantic coral & hardbottom:** Predicts the presence of coral and hardbottom habitat based on direct observations, distribution models, and known human-created structures (*source: TNC South Atlantic Bight Marine Assessment; Blake Plateau coral mound data; NOAA deep-sea coral/sponge observations, shipwrecks, artificial reefs, hardbottom distribution data; FL artificial reefs*).
- **Atlantic deep-sea coral richness:** Measures the number of deep-sea coral genera predicted to occur offshore (*source: NOAA deep-sea coral distribution data*).
- **Atlantic estuarine fish habitat:** Assesses estuarine fish habitat condition based on water quality, marsh edges, seagrass, oyster reefs, and more (*source: ACFHP*).
- **Atlantic marine birds:** Identifies important areas for 19 bird species that feed exclusively or mainly at sea (*source: Duke Marine-life Data & Analysis Team*).
- **Atlantic marine mammals:** Identifies important areas for 20 species and species groups of dolphins, whales, and seals (*source: Duke Marine Lab*).
- **Coastal shoreline condition:** Evaluates shoreline condition based on the presence of hardened structures and ease of development in coastal areas (*source: NOAA Environmental Sensitivity Index - ESI, Coastal Barrier Resource System*).
- **Estuarine coastal condition:** Assesses estuarine water quality, sediment quality, contaminants in fish tissue, and benthic community condition (*source: EPA National Coastal Condition Assessment*).
- **Gulf coral & hardbottom:** Predicts the presence of coral and hardbottom habitat based on direct observations, acoustic surveys, and known human-created structures (*source: Bureau of Ocean Energy Management seismic water bottom anomalies; usSEABED sediments; TNC South Atlantic Bight Marine Assessment; FL coral/hardbottom habitats; LA, TX, MS, AL & FL artificial reefs; NOAA deep-sea coral/sponge observations, shipwrecks*).
- **Gulf deep-sea coral richness:** Measures the number of deep-sea coral genera predicted to occur offshore (*source: NOAA deep-sea coral distribution data*).
- **Gulf marine mammals:** Identifies important areas for 13 species or species groups of dolphins and whales (*source: NOAA Gulf of Mexico Marine Assessment Program for Protected Species - GoMMAPPS*).
- **Gulf sea turtles:** Identifies important areas for 4 species of sea turtles (*source: NOAA GoMMAPPS*).
- **Island habitat:** Identifies important habitat for island-dependent species (*source: USFWS critical habitat, Esri/USGS island boundaries*).
- **Marine highly migratory fish:** Identifies important foraging and spawning areas for 3 highly migratory fish species at various life stages (*source: European Commission global fish models*).
- **Resilient coastal sites:** Assesses the ability of coastal sites to migrate inland to sustain biodiversity and natural services under increasing inundation from sea-level rise (*source: TNC Resilient Coastal Sites*).
- **Seagrass:** Identifies seagrass locations (*source: NOAA Marine Cadastre*).
- **South Atlantic beach birds:** Predicts habitat suitability for 4 shorebird species (*source: bird data from USGS and state waterbird biologists*).
- **South Atlantic maritime forest:** Identifies maritime forest locations (*source: LANDFIRE*).
- **Stable coastal wetlands:** Evaluates marsh stability and resilience based on the ratio of plants to non-plants over time (e.g., open water or sediment) (*source: USGS unvegetated-vegetated ratio data*).



# Caribbean

Puerto Rico & the U.S. Virgin Islands + nearshore marine waters



## Terrestrial

- **Caribbean greenways & trails:** Assesses the natural condition and connected length of recreational paths (*source: OpenStreetMap, NOAA C-CAP*).
- **Caribbean habitat patch size (large islands):** Measures the size of natural, unfragmented habitat patches on large islands (*source: LANDFIRE*).
- **Caribbean habitat patch size (small islands):** Measures the size of natural, unfragmented habitat patches on small islands (*source: LANDFIRE*).
- **Caribbean island habitat:** Assesses the importance of island habitat for federally listed and other imperiled species based on the presence of imperiled and invasive animals (*source: USFWS critical habitat, Puerto Rico GAP, U.S. Virgin Islands GAP, Island Conservation Threatened Island Biodiversity Database*).
- **Caribbean karst habitat:** Identifies natural karst areas with limited human alteration (*source: LANDFIRE; karst layers from USGS, NPS, Puerto Rico Dept. of Natural & Environmental Resources*).
- **Caribbean landscape condition:** Assesses the degree of human alteration of natural habitat at multiple scales, from a specific site to the surrounding landscape (*source: LANDFIRE*).
- **Caribbean low-urban historic landscapes:** Assesses the degree of urban development surrounding historic sites (*source: LANDFIRE, historic sites from OpenStreetMap, Puerto Rico SHPO, University of the Virgin Islands*).
- **Caribbean mangrove migration:** Identifies current and potential future locations of mangroves (*source: NOAA C-CAP, LANDFIRE*).
- **Caribbean reforestation potential:** Prioritizes areas to increase tree cover based on current land uses and benefits to drinking water supplies (*source: LANDFIRE*).
- **Caribbean urban park size:** Measures the size of parks in the urban environment (*source: Census urban areas, PAD-US, OpenStreetMap, Puerto Rico Protected Natural Areas, TNC*).
- **Puerto Rico potential access to parks:** Prioritizes places to create new parks to fill gaps in access to green space within socially vulnerable communities (*source: TPL ParkServe, CDC Social Vulnerability Index*).
- **U.S. Virgin Islands imperiled terrestrial species:** Identifies potential habitat to support terrestrial species of conservation interest (*source: WildMon, USFWS species range maps, LANDFIRE, NOAA C-CAP*).



## Freshwater

- **Caribbean natural landcover in floodplains:** Measures the percent of natural landcover in the estimated floodplain by catchment (*source: LANDFIRE, NHDPlus HR, Federal Emergency Management Agency - FEMA National Flood Hazard Layer*).
- **Caribbean network complexity:** Counts the number of connected stream size classes in a river network between dams or waterfalls (*source: SARP network complexity data, NHDPlus HR, FEMA National Flood Hazard Layer*).
- **Caribbean permeable surface:** Measures the average percent of non-impervious landcover in each catchment (*source: NOAA C-CAP, NHDPlus HR*).



# Caribbean

Puerto Rico & the U.S. Virgin Islands + nearshore marine waters



## Coastal & Marine

- **Caribbean beach habitat:** Evaluates beach habitat for 6 species of beach-nesting birds and sea turtles (*source: PR & USVI GAP, State of the World's Sea Turtles; beaches from OpenStreetMap, NOAA Caribbean Climate Adaptation Program*).
- **Caribbean coastal shoreline condition:** Assesses the extent of coastal shoreline armoring (*source: NOAA Continuously Updated Shoreline Product*).
- **Caribbean fish hotspots:** Predicts levels of fish density and diversity based on the proximity of mangroves, seagrass, and coral (*source: NOAA C-CAP, TNC benthic habitat map*).
- **Caribbean fish nursery habitat:** Identifies fish nursery, spawning, and concentration areas like lagoons, bays, estuaries, and reefs (*source: NOAA ESI*).
- **Caribbean mangrove migration:** Identifies current and predicted future mangrove locations (*source: NOAA C-CAP, LANDFIRE*).
- **Caribbean seagrass:** Identifies the presence and density of seagrass at various depths (*source: TNC benthic habitat map, NOAA bathymetry*).
- **Caribbean shallow hardbottom & coral:** Identifies the presence of hardbottom habitat and coral and assesses coral resilience to climate change (*source: TNC benthic habitat map and coral climate refugia*).