Digital Range Maps for 606 Terrestrial Vertebrates of the Southeastern United States

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INTRODUCTION

The Southeast Gap Analysis Project (SE-GAP) has developed digital polygon range maps for 606 terrestrial vertebrates that regularly breed within the region (see Figure 1), as well as wintering ranges for 28 bird species and 3 mammalian species. Currently, few if any, maps exist in a digital format and those that do tend to be generalized delineations (i.e. low spatial resolution) that can vary widely (Figures 1 & 2). The focus of the SE-GAP effort has been to provide more detailed species' range maps that will serve two purposes:

- As a stand-alone product useful for the conservation community at-large
- As a model delimiter for GAP predicted vertebrate distribution models

Figure 1. NatureServe digital distribution map for the Black Rail *(Laterallus jamaicensis)*.

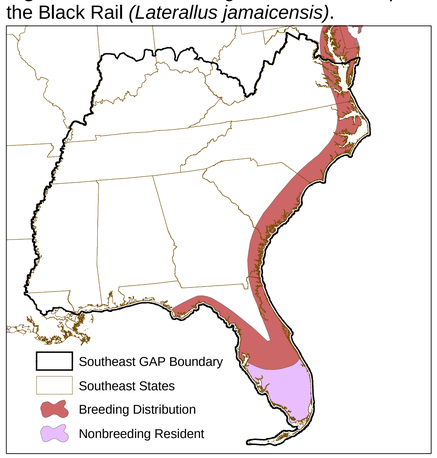
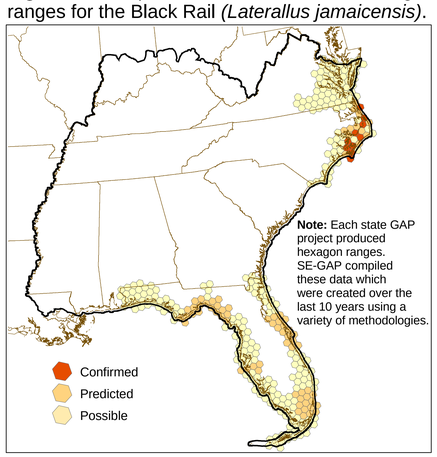


Figure 2. Compiled individual state GAP hexagon ranges for the Black Rail *(Laterallus jamaicensis)*.



METHODS and DATA

A variety of sources were used to develop species' range maps. These sources consisted of information in two broad categories:

- Species location records and range maps available in a number of formats (Table 1)
- Digital spatial data of environmental parameters (Table 2)

Table 1. Examples of species distribution data sources and their available formats utilized during SE-GAP digital species range map development

Data Source Formats				
Digital	Print	Web-based	Written Documentation	Personal Communication
Breeding bird atlases	Breeding bird atlases	Breeding bird atlases	Taxonomically specific publications	Conversations with biologists and taxonomic experts
NatureServe	Taxonomically specific publications	Birds of North America	Primary literature	
State GAP hexagon ranges	Primary literature	State Natural Heritage Programs	Individual research projects	
State Natural Heritage Programs	Individual research projects	State and federal inventory programs	Field guides	
State and federal inventory programs	USFWS Endangered species recovery plans	Individual research projects		
	Field guides			

METHODS and DATA

Digital data sources were used explicitly within GIS during digitization of polygons (Figures 3 & 4). Up-to-date published sources were consulted when available (Figrure 5). Web-based sources are becoming increasingly available and are often the most recent information on species' occurrences (Figures 6 & 7).

Figure 3. Use of 8-Digit HUCs to delineate range for the Western Chorus Frog *(Pseudacris triseriata)*

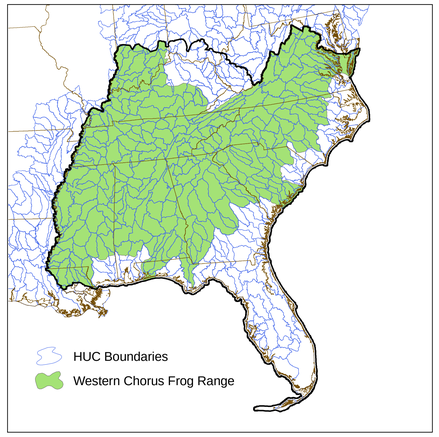


Figure 4. Use of point data to delineate range for the Willow Flycatcher *(Empidonax traillii)*. Points outside polygon range are >20 years old or migratory records.

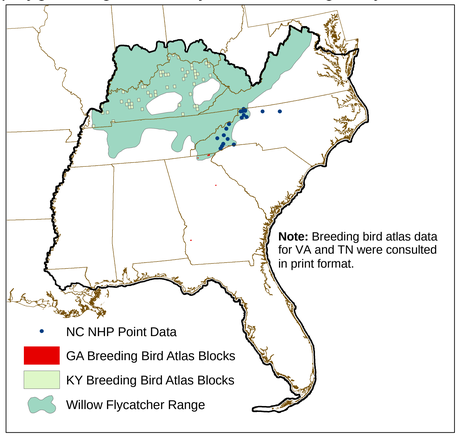


Figure 5. Leatherback turtle *(Dermochelys coriacea)* range Nest locations map from literature source (Rabon et al. 2003).

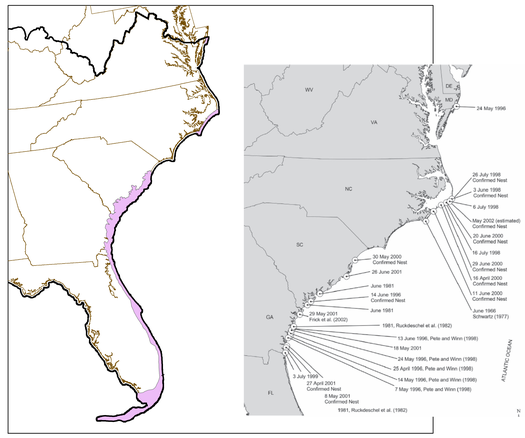


Figure 6. ARMI Atlas range for Chamberlain's Dwarf Salamander *(Eurycea chamberlani)* (Blackburn et al. 2002).

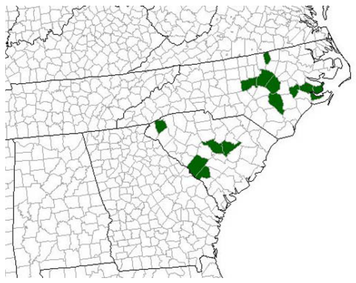


Figure 7. Birds of North America and Florida Breeding Bird Atlas ranges for Snowy Egret *(Egretta thula)*. (Parsons and Master 2000, FL FWCC 2003).

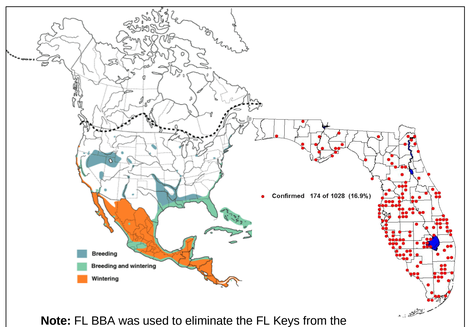


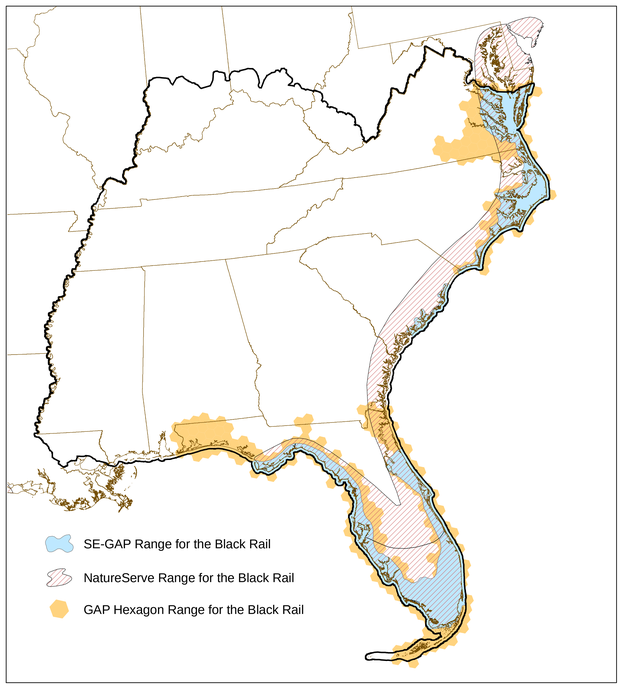
Table 2. Environmental data layers utilized during SE-GAP digital species range map development

Data Layer	Source	Resolution or Scale
Ecoregions	EPA Omernik Level III & Level IV Ecoregions	1:100,000 & 1:24,000
Elevation	USGS National Elevation Dataset Digital Elevation Models (DEMs)	30 m grid cells
Geology	Individual State Resource Agencies	1:100,000 – 1:500,00
Salinity	NOAA 3-Zone Average Annual Salinity Digital Geography	? (~1:250,000)
Soils	Natural Resources Conservation Service Soils State Soil Geographic database (STATSGO) & Soil Survey Geographic database (SSURGO)	1:100,000 & 1:24,000
Streams & Waterbodies	USGS National Hydrography Dataset (NHD)	1:100,000 & 1:24,000
Watershed Boundaries	USGS 8-Digit Hydrologic Unit Code (HUC) Boundaries	1:100,000 & 1:24,000

RESULTS and CONCLUSIONS

SE-GAP has created detailed digital range maps for southeastern terrestrial vertebrates by compiling the most recent information available regarding species' occurrences and limiting environmental parameters that affect species' distributions (Figure 8). This is likely one of the most comprehensive dataset for species ranges available digitally. The data are currently in draft format awaiting input by expert reviewers. After finalization, the products should benefit researchers, planners, and managers alike, as well as serving the end goals of Gap Analysis in the Southeast.

Figure 8. SE-GAP range for Black Rail *(Laterallus jamaicensis)* showing the incorporation of NatureServe and GAP hexagon ranges.



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