Using Coarse Scale Analysis to Identify Areas for Fine Scale Analysis

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This document is the result of an internal scoping and exploratory analysis based on publically available data and has not been peer-reviewed. We hope it will initiate discussion on effective and efficient pre-compliance management for at-risk species in the southeast.

The analysis presented in this document has been used to answer a variety of questions at the regional scale of the Southeast. This coarse scale analysis can potentially highlight areas that would benefit from further analysis at a finer scale. This section presents two examples of areas that could be investigated further based on the results of the regional analysis.

AREAS OF INTEREST: I–85 DEVELOPMENT CORRIDOR

This data and analyses presented in this document could be applied to particular regions of interest, such as the stretch of Interstate 85 between Atlanta, Georgia and the Triangle area of North Carolina (Raleigh, Durham, and Chapel Hill), which has been a focal area of development in the southeast. Zooming in on patterns of at-risk species numbers along this corridor highlights that few at-risk species are in this area. However, because of the extensive and ongoing development in this area, at-risk species may have already disappeared (Figure 23).

Focusing on Areas of Interest
AT-RISK SPECIES NUMBERS ALONG
THE I-85 DEVELOPMENT CORRIDOR

Overlays viewed for a particular area of interest can reveal information that is more difficult to discern at a regional level. Zooming in on a corridor of high urban expansion along Interstate 85 between Atlanta, Georgia and the Triangle area of North Carolina (Raleigh, Durham, and Chapel Hill) shows that this area currently has relatively low numbers of at-risk species, either listed or petitioned/candidate, potentially because at-risk species have already disappeared from this area.

Listed species are those defined by USFWS to be either threatened or endangered. Candidate species were identified from the Federal Register, Docket No. FWS-R9-ES-2012-0050; MO-4500030113 (Vol. 77, No. 225, November 21, 2012). Petitioned species were identified from a revised version of the Center for Biological Diversity's "Petition to List 404 Aquatic, Riparian, and Wetland Species from the Southeastern United States as Threatened or Endangered Under the Endangered Species Act" submitted on April 20, 2010 (Federal Register, Docket No. FWS-R4-ES-2011-0049). Spatial information (county FIPS codes) was identified primarily using NatureServe's Explorer platform(www.natureserve.org/explorer/) and supplemented with the USFWS Species Profile platform (ecos.fws.gov/speciesProfile). Spatial information is incomplete and species without identified counties are excluded. Urban areas are defined as those with at least 50,000 people by the U.S. Census Bureau (TIGER/Line data 2012).

Number of Species
- 1
- 2 - 3
- 4 - 6
- 7 - 9
- 10 - 15
- 16 - 20
- 21 - 25
- 26 - 30
- 31 - 35
- 36 - 40
- 41 - 49
- I-85
- Urban Areas

Listed Species

Petitioned and Candidate Species

Figure 23: A zoom-in of an area of rapid urban expansion along I-85 between Atlanta, GA and Raleigh / Durham / Chapel Hill, North Carolina.
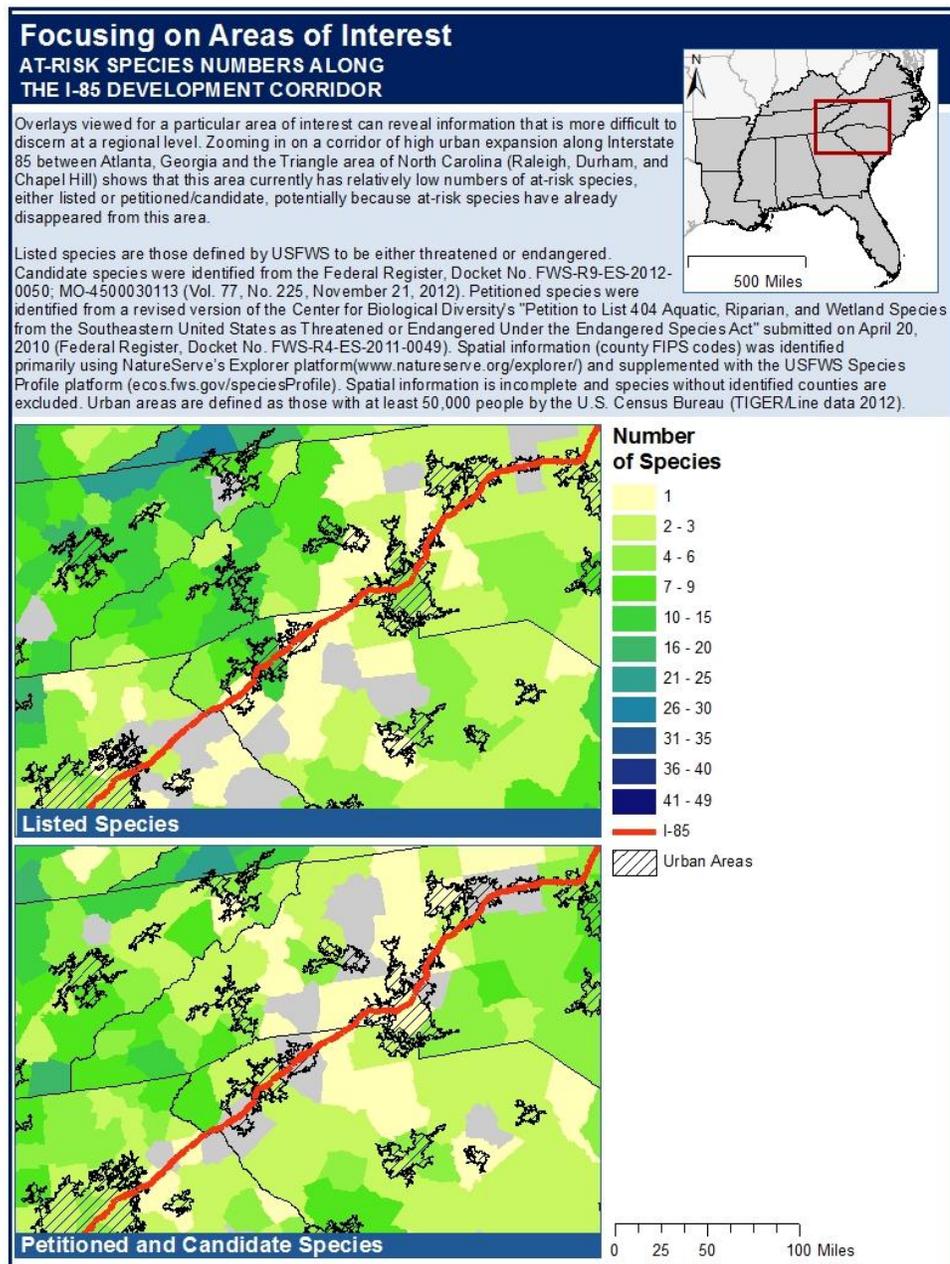
Given that many at-risk species may already have disappeared from this corridor, what species are left? Fifty petitioned or candidate species range in counties within 25 miles of this stretch of Interstate, with an average of less than 3 species per county. Of these 50 species, 14 are plants and another 14 are mussels. The remaining species are fish, crustaceans, amphibians, and insects. Protected areas are relatively scarce, which is unsurprising given the high level of development (Figure 24).
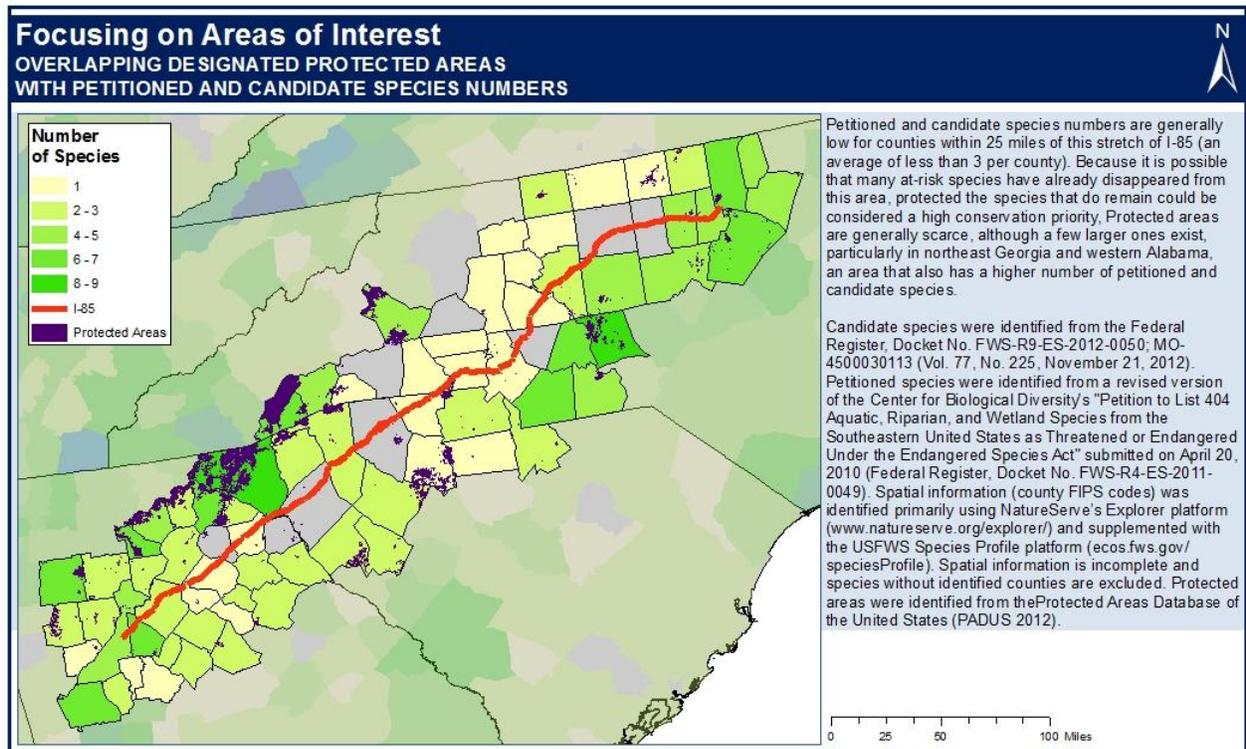
Figure 24: Petitioned and candidate species numbers with designated protected areas in counties within 25 miles of I-85 between Atlanta, Georgia and the Raleigh/Durham/Chapel Hill area of North Carolina.

OVERLAPPING THREATS AND AT–RISK SPECIES

Overlays with multiple layers can highlight areas that have a "perfect storm" combination of characteristics. Northern Alabama has several urban areas, plus most counties have at least 25% agricultural land cover. This area also has a relatively high number of at-risk species (Figure 24). Madison County in particular, includes the city of Huntsville, more than 25% agriculture, and 18 petitioned or candidate species. Twelve of these 18 species are mussels. Given the sensitivity of mussels to water quality and the potential impacts both urbanization and agriculture can have on water quality, this area might be of higher conservation priority. Overlaying current protected areas highlights that the majority of areas are small and scattered (Figure 25). However, many of these areas align the banks of two major lakes and their adjoining rivers; therefore, aquatic petitioned and candidate aquatic species may already be somewhat protected.
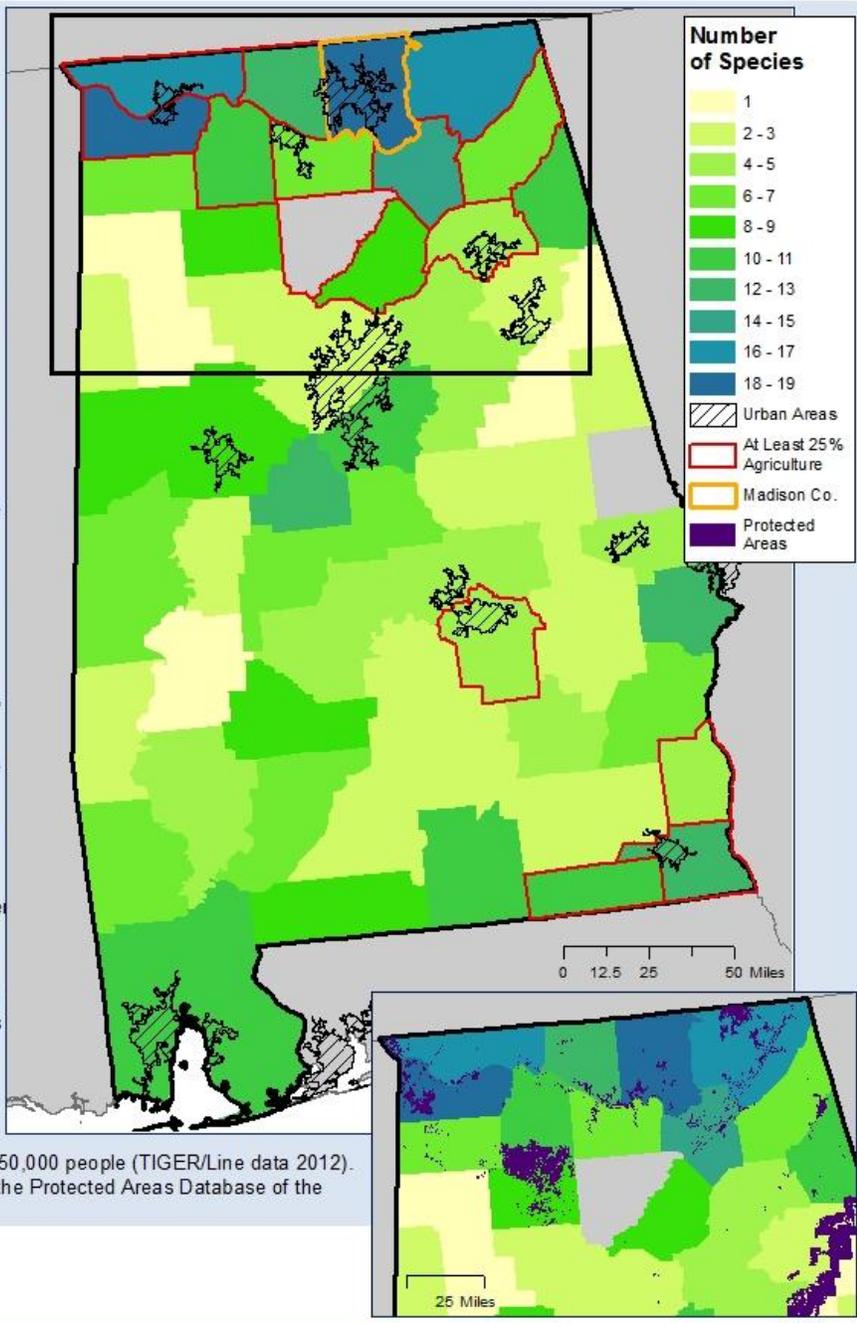
High Threat + High Numbers of At-Risk Species
NORTHERN ALABAMA

Overlays of multiple layers can highlight areas with a "perfect storm" combination of characteristics. Northern Alabama, an area with high numbers of at-risk species, also has several urban areas and a high percentage of agricultural development. Madison County in particular, contains the city of Huntville, is over 25% agricultural, and has 18 at-risk species. Twelve of these species are mussels. Given the potential negative impacts of urbanization and agriculture on water quality, this area may be a higher priority for conservation efforts.

At-risk species include those that are currently listed, candidates, or petitioned to be listed. Listed species are those defined by USFWS to be threatened or endangered. Candidate species were identified from the Federal Register, Docket No. FWS-R9-ES-2012-0050; MO-4500030113 (Vol. 77, No. 225, November 21, 2012). Petitioned species were identified from a revised version of the Center for Biological Diversity's "Petition to List 404 Aquatic, Riparian, and Wetland Species from the Southeastern United States as Threatened or Endangered Under the Endangered Species Act" submitted on April 20, 2010 (Federal Register, Docket No. FWS-R4-ES-2011-0049). Spatial information (county FIPS codes and HUC8) was identified primarily using NatureServe's Explorer platform (www.natureserve.org/explorer/) and supplemented with the USFWS Species Profile platform (ecos.fws.gov/speciesProfile). Spatial information is incomplete and species without identified counties are excluded. Agricultural lands were isolated from NLCD 2006 (land cover classifications 81 and 82). Urban areas are those identified by the U.S. Census Bureau to have at least 50,000 people (TIGER/Line data 2012). Protected areas were identified from the Protected Areas Database of the United States (PADUS 2012).

Number of Species

- 1
- 2 - 3
- 4 - 5
- 6 - 7
- 8 - 9
- 10 - 11
- 12 - 13
- 14 - 15
- 16 - 17
- 18 - 19
- Urban Areas
- At Least 25% Agriculture
- Madison Co.
- Protected Areas

0   12.5   25   50 Miles

25 Miles

Figure 25: Overlapping areas of significant urbanization, agriculture, and numbers of petitioned and candidate species suggest that northern Alabama may be a conservation priority.