The Southeast Isolated Wetland Assessment (SEIWA) explored the extent, condition, and significance of the isolated wetland (IW) resource in an 8-county portion of the coastal plain of North and South Carolina. IWs are wetlands that have no surface connection to downstream waters via a stream, ditch, or continuous wetlands. SEIWA, funded by a U.S. EPA REMAP grant, was conducted because:

1. Court decisions on the lack of surface connectivity to navigable waters leading to varying degrees of regulatory protection for IWs in NC, SC, and elsewhere (Dorney et al., 2012).
2. The need to scientifically based estimates of IW extent to understand how SWAMIC and other court decisions may affect wetland resources (Lambert and Nezlin, 2001).
3. Recent increase in development pressure on wetlands across the southern Atlantic coast.
4. Little study of IW extent, condition, and function on the southeast coastal plain.

2. Study Area – Southeast Atlantic Coastal Plain (NC and SC)

Eight counties (approximately 5,500 mi²) in North and South Carolina were selected due to:
1. Numerous wetlands, with many undisturbed IWs (Ter et al., 2002; Corne et al., 2003);
2. Dire need to regulatory programs in two states;
3. Common issues, geology, biology, and wetland functions in comparable ecosystems.
4. Sharp development gradient; coastal counties with rapid development and inland counties with little or no growth but active land conversion for agriculture and agriculture.

5. Large area enough to have a large number of IWs, yet small enough to be accessible.

SEIWA combined a statistical sampling design with remote (Level 1) and field (Level 2 and 3) wetland assessment methods to estimate, with a known degree of certainty, the extent, condition, and relative function of IWs in the NC and SC study area.

3. Study Methods – Overview

SEIWA developed the following four assessment steps:
1. Ground-truthed IW areas were digitized from aerial photos, LiDAR, and field observations.
2. Level 1 GIS analysis used the digitized IW areas to derive probability of occurrence for each county, with the probability data used as input to a stratified random sample design.
3. Level 2 field assessments were conducted to confirm identification and assess condition and function.
4. Level 3 assessments involved additional high-quality field sampling for the collection of additional data.

4. Results – Isolated Wetland Numbers, Extent, Size, and Type

IW numbers are small, and spread across the study area.

Overall the study area contains about 52,000 IWs, with 22,000 in NC and 30,000 in SC, and a total acreage of about 40,000 acres. Average density is about 8 IWs per square mile. 99% of the IWs occur on the marine terraces that define the area’s geomorphology.

IW sizes are generally small – a median size of 0.41 acres and a range from 0.01 to 2.1 acres. Large isolated wetlands appear to be rare because as size increases they are more likely to be in more isolated locations.

Most IWs are small, black, with high occurrences in shallow depressions on the upland coastal plain marine terraces, and are mainly 3 general types: brackish floodplain (5%), brackish ponds (3%), and small ponds (99%) [see Poster 370 for density by size].

7. Discussion and Conclusions

The SEIWA project continued to be relevant to the regulation and protection of IWs in NC and especially SC, where there is a perennial interest in IWs and their regulation; for example, recent legislation has called for an inventory of IWs in NC.

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