Nonalluvial Mineral Wetlands

Mid-Atlantic Coastal Plain

These wetlands occur on poorly drained areas of the eastern Coastal Plain. Saturation is due to poor drainage and sheet flow from adjoining peatlands. Nonalluvial mineral wetlands are more nutrient-rich than pocosins, but not as rich as floodplain wetlands. In the wettest areas, bald cypress, swamp black gum, and red maple dominate. Where these areas transition to peatland, loblolly pine, pond pine, and Atlantic white cedar may also be present. In less saturated nonalluvial wetlands, trees characteristic of bottomland hardwood systems dominate: cherrybark oak, laurel oak, swamp chestnut oak, tulip poplar, sweetgum, American elm, and red maple.

Where limestone deposits are near the surface of the ground, the fertility of the soil is improved and a wide variety of trees can occur, including nutmeg hickory, Shumard's oak, Carolina basswood, swamp chestnut oak, water hickory, bitternut hickory, and sweetgum. Pawpaw and redbud may be present in the understory and dwarf palmetto is abundant in the shrub layer (NCNHP 2001).

Both Nonriverine Wet Hardwood Forest and Nonriverine Swamp Forest communities exist in the outer Coastal Plain and both are seasonally saturated or flooded by high water tables (Schafale and Weakley 1990). Fire was unlikely an important part of these systems naturally, although some Nonriverine Wet Hardwood Forests did support canebrakes historically (Schafale and Weakley 1990). Nonriverine Wet Hardwood Forests are typically drier than Nonriverine Swamp Forests and have more bottomland hardwood species present in their canopy (Schafale and Weakley 1990).

These sites are important for variety of neotropical migrants during the breeding season and migration periods (Hunter *et al*. 2000 and Johns 2004), and also several reptiles of conservation concern. The shrubby nature of some of these sites is thought to be related to logging and since they are easy to drain and make excellent farmland, most of these areas have been lost (Schafale and Weakley 1990). Table 1 provides a list of priority species for which there is conservation concern.

Table 1. Priority species associated with coastal plain nonalluvial mineral wetlands.

Group	Scientific name	Common name	State status* (Federal Status)
Birds	*Dendroica virens waynei*	Wayne's Black-throated Green Warbler	
	Helmitheros vermivorous	Worm-eating Warbler	
	Limnothlypis swainsonii	Swainson's Warbler	
	Nyctanassa violacea	Yellow-crowned Night-heron	
	Oporornis formosus	Kentucky Warbler	
	Wilsonia citrina	Hooded Warbler	

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Group	Scientific name	Common name	State status* (Federal Status)
Mammals	*Corynorhinus rafinesquii*	Rafinesque's Big-eared Bat	T
	Lasiurus intermedius	Northern Yellow Bat	SR
	Lasiurus seminolus	Seminole Bat	
	Myotis austroriparius	Southeastern Bat	SC
	Neotoma floridana	Eastern Woodrat	T
Amphibians	*Desmognathus auriculatus*	Southern Dusky Salamander	
	Pseudacris nigrita nigrita	Striped Southern Chorus Frog	
Reptiles	*Cemophora coccinea copei*	Northern Scarletsnake	
	Crotalus horridus	Timber (Canebrake) Rattlesnake	SC
	Elaphe guttata	Corn Snake	
	Eumeces laticeps	Broad-headed Skink	
	Farancia abacura abacura	Eastern Mudsnake	
	Heterodon platirhinos	Eastern Hog-nosed Snake	
	Lampropeltis calligaster rhombomaculata	Mole Kingsnake	
	Lampropeltis getula getula	Eastern Kingsnake	
	Lampropeltis triangulum elapsoides	Scarlet Kingsnake	
	Masticophis flagellum	Eastern Coachwhip	SR
	Ophisaurus mimicus	Mimic Glass Lizard	SC
	Rhadinaea flavilata	Pine Woods Littersnake	
	Sistrurus miliarius	Pigmy Rattlesnake	SC
	Tantilla coronata	Southeastern Crowned Snake	
	Virginia valeriae valeriae	Eastern Smooth Earthsnake	

*Abbreviations
T Threatened
SC Special Concern
SR Significantly Rare

Location and condition of habitat

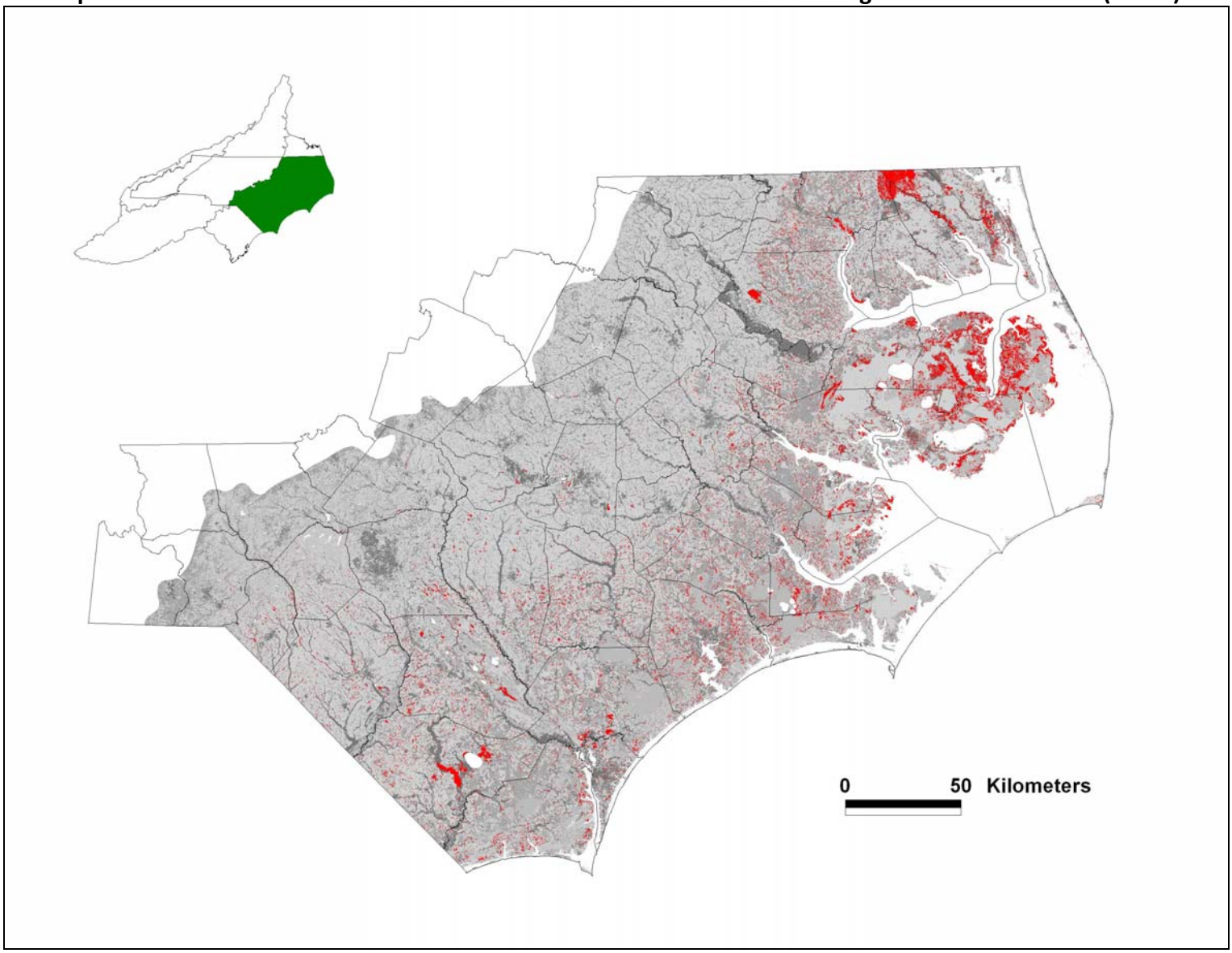
Examples of this habitat type can be found in Alligator River National Wildlife Refuge, Swanquarter National Wildlife Refuge, Great Dismal Swamp National Wildlife Refuge, Hoffman Forest, Rocky Point and several swamps in Washington County. Map 1 depicts locations of nonalluvial mineral wetlands in the Mid-Atlantic Coastal Plain ecoregion.

The condition of nonalluvial mineral wetlands in the coastal plain is generally poor due to alternation of hydrology (primarily from draining for farmland and conversion to loblolly pine plantation) and is rather fragmented. Some of the best remaining examples are on public lands

such as on Alligator River National Wildlife Refuge, Swanquarter National Wildlife Refuge and the Great Dismal Swamp National Wildlife Refuge.

Nonalluvial mineral wetlands tend to be converted for forestry and agriculture more readily since the mineral soils can support heavy equipment better than organic soils, and they are more fertile. Much of this type existed in Beaufort and Pamlico counties until recent years; relatively little remains. A higher percentage of this habitat type has probably been destroyed than any other type in the coastal plain, with the exception of dry longleaf pine.

Map 1: Nonalluvial mineral wetlands in the Mid-Atlantic Coastal Plain ecoregion of North Carolina (in red).



Data source: NC GAP, 1992

Problems Affecting Species And Habitats

Fire suppression has certainly led to a decline in some of the diversity of these habitats but the alteration of hydrology from ditches associated with farming and forestry practices is the biggest factor impacting this habitat type. Non-native plant species (e.g., Privet, Japanese grass) are also competing with native vegetation in many areas, especially those frequently disturbed. Although little of this quality habitat remains, it can be burned more safely than those sites with organic soils. Therefore the potential still exists to re-establish some high quality nonalluvial mineral wetlands on the coastal plain of North Carolina, where it has not already been converted to farmland or ditched for pine plantations.

Species And Habitat Conservation Actions and Priorities For Implementation

Site protection and protection of surrounding areas through land acquisition or easements and cooperation with land trusts are urgently needed, as large acreages (>500 acres) are frequently clearcut all at once for agriculture, pine conversion, or development. Regional land trusts and The Nature Conservancy can be valuable partners in these efforts. Identified funding sources for acquisition include the Clean Water Management Trust Fund, Coastal Wetlands Grants, Natural Heritage Trust Fund, Forest Legacy Grants, and Recovery Land Acquisition Grants. Restoration efforts may be possible in some cases through partnerships with land trusts, the Nature Conservancy, and state and federal agencies.

The use of fire at the remaining unconverted nonalluvial mineral wetland sites is the single most important factor to restore these sites. Plowed firelines along transition zones between habitats should be rehabilitated (smoothed over) where possible. If feasible, fires should be allowed to sweep through the habitat or at least into the edges of the wetland from the adjacent upland sites. New firelines should be constructed when necessary. These areas should be maintained as a permanent narrow opening by discing with a tractor or by wetting with water or foam prior to a burn.

The maintenance of contiguous gradients between wetland and adjacent upland sites is critical for seasonal migration and dispersal of herpetofauna. Roads, agriculture, or forestry operations between complimentary sites may still render them ineffective at supporting amphibian and reptile populations. Where fire cannot be introduced back into the site for smoke management or other reasons, the use of a hydro-ax or other chipping machinery should be considered to control midstory (where funds allow).

Priority Research, Survey, And Monitoring

The following are some of the priority research, survey, and monitoring efforts needed to Identify factors to assist In the restoration and conservation of wildlife species.

- **Surveys**
  - Determine the status of yellow-crowned night-heron, other colonial nesting birds, Wayne's black-throated green warbler, as well as other neotropical migrants that are not well sampled by BBS.
  - Document the status and distribution of priority bat species (e.g. Rafinesque's big-eared bat, northern yellow bat, Seminole bat and southeastern bat) in this habitat.
  - Conduct eastern woodrat surveys and subsequently establish standardized long-term monitoring of the species in this habitat.
  - Determine the status and distribution of canebrake and pigmy rattlesnakes.
  - Survey for other high priority snakes and lizards.
- **Monitoring**
  - Establish long-term monitoring for Wayne's black-throated green warbler and other neotropical migrants that are not well tracked by BBS in this habitat type.
  - Establish MAPS and migration bird banding stations.
  - Following the establishment of surveys to document priority bat use of the habitat, continue with long-term monitoring.
  - Following the establishment of surveys to document priority reptile use of the habitat, continue with long-term monitoring.
- **Research**
  - Conduct home-range and movement research on timber (canebrake) and pigmy rattlesnakes (possibly on other snakes of conservation concern as well).
  - Conduct genetics research to determine if the coastal worm-eating warbler is a separate sub-species.
  - Explore alternatives (herbicides or mechanical) to using fire for the initial restoration of severely fire suppressed non-alluvial wetlands.

Supporting References

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