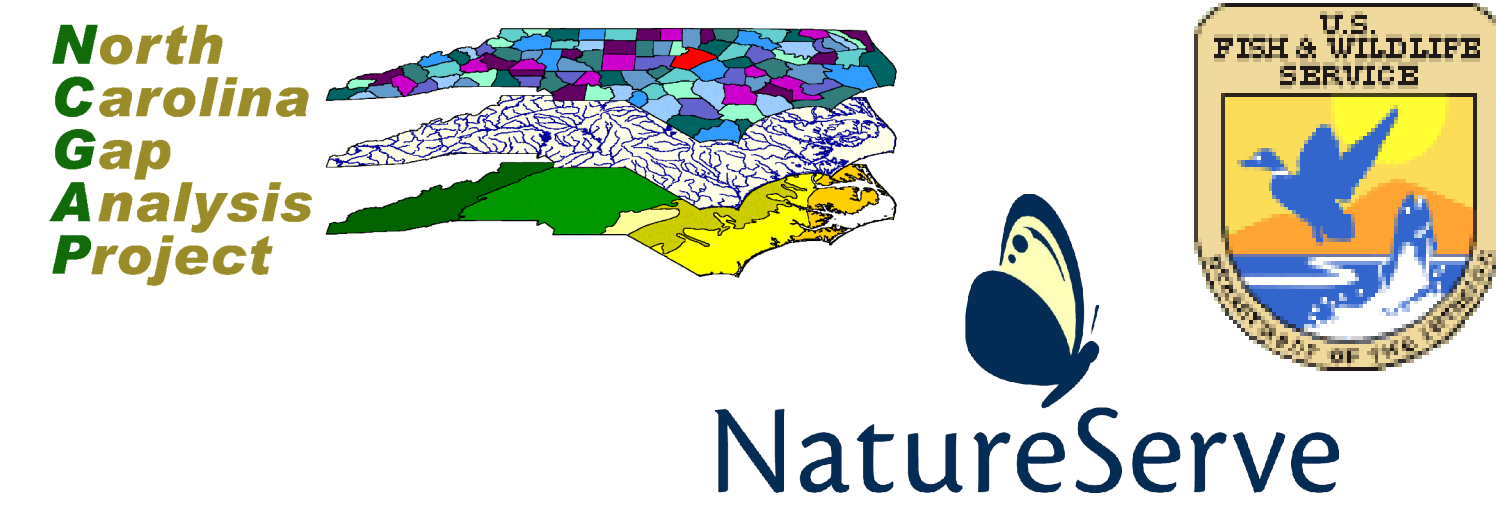


Representation of North Carolina Land Cover Types on U.S. Fish and Wildlife Service National Wildlife Refuges



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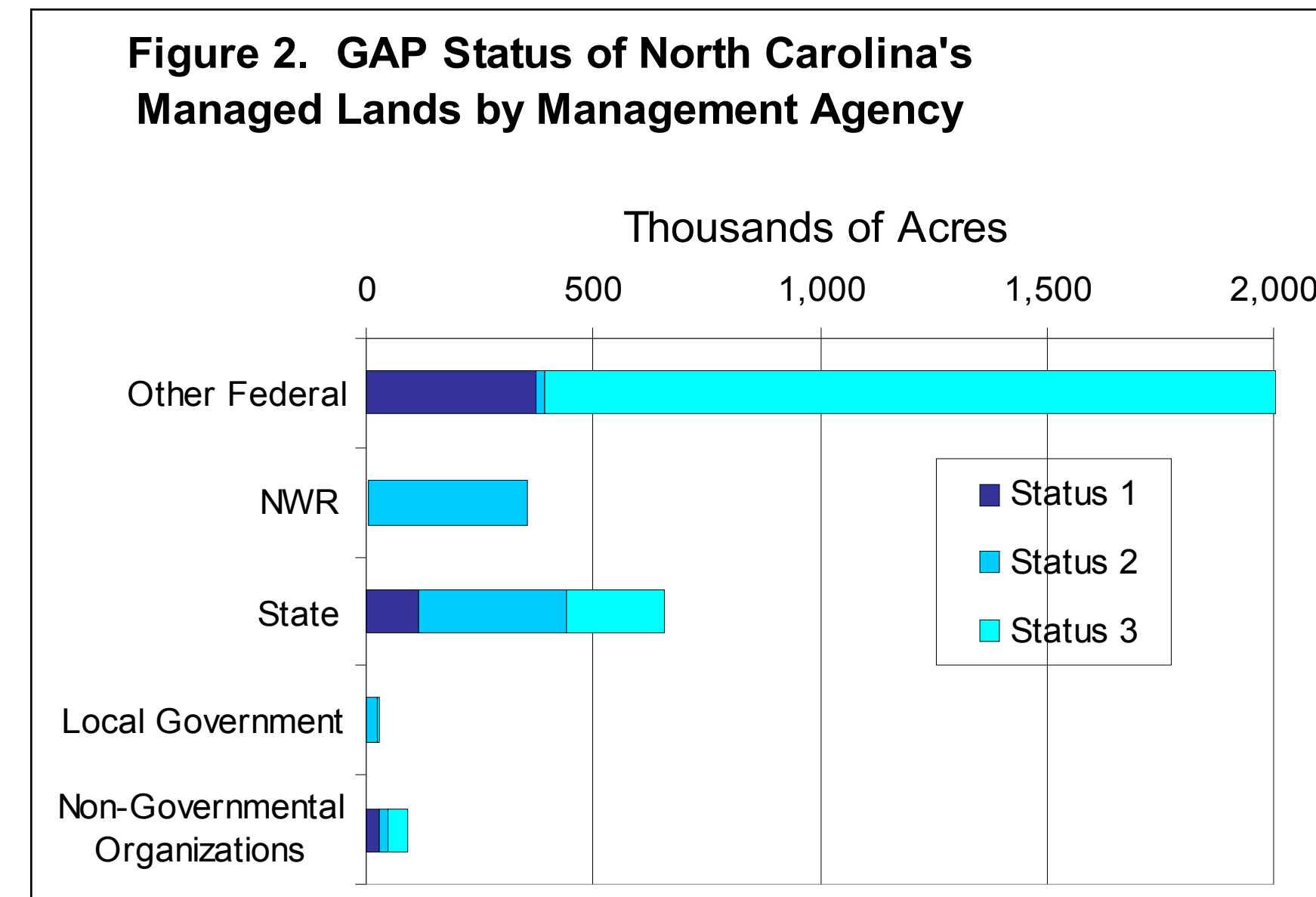
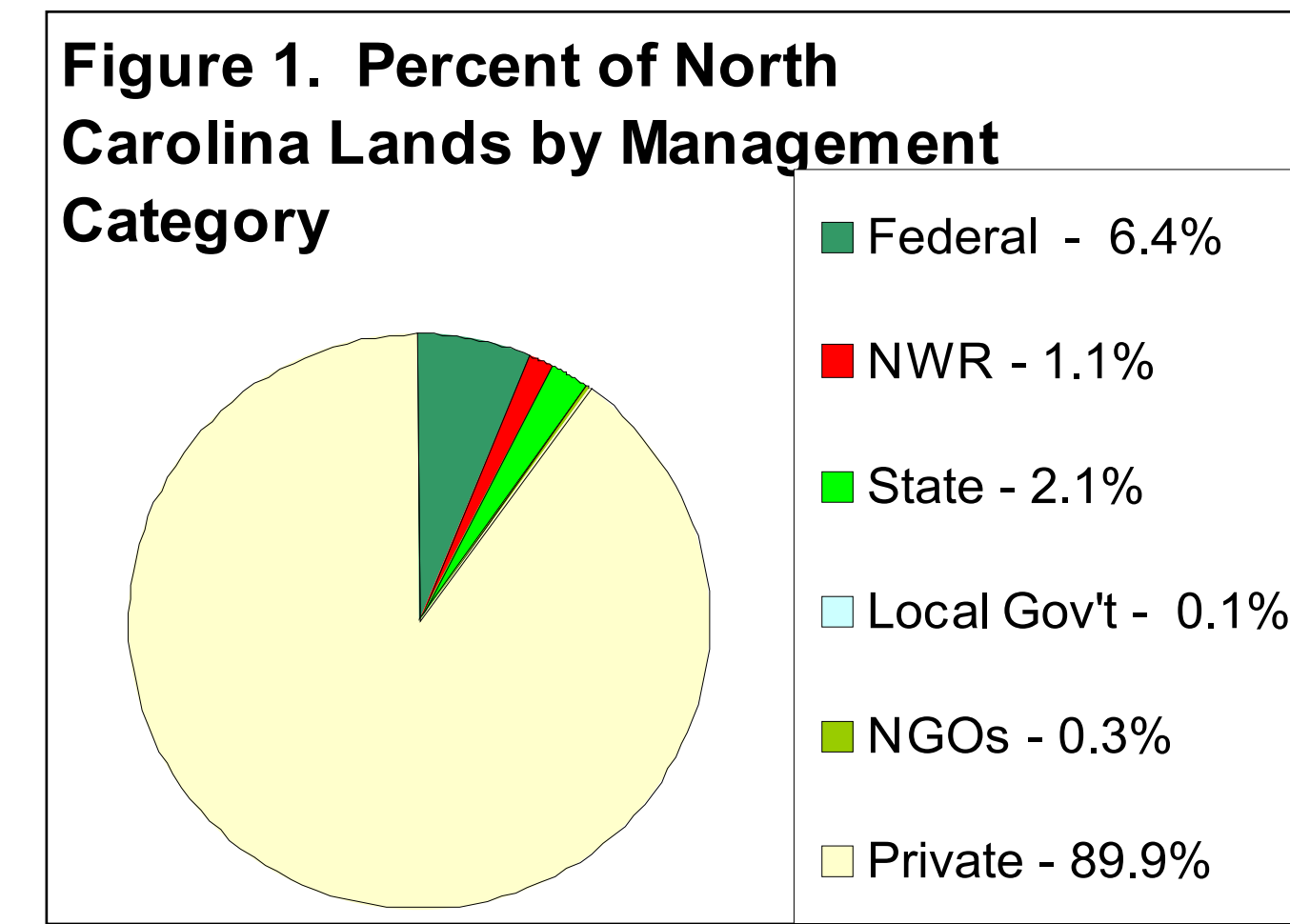
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Introduction:

In North Carolina, where less than 10% of the land is publicly managed (Figure 1) the National Wildlife Refuges (NWR) make an important contribution to the protection of many of our state's vegetation types. In this analysis we used the North Carolina Gap Analysis datasets to focus on three questions about the role of NWR lands in North Carolina's conservation network.

What vegetation types are represented on the NWRs in the North Carolina?

In North Carolina there are approximately 352,538 acres of NWR land. That acreage represents 1.1% of the land in the state and approximately 27% of the Status 1 and 2 lands. Thirty-six natural land cover types were mapped on one or more of the eleven NWRs (Table 1).



The natural cover classes that are best represented on the NWRs include Maritime Pinelands (Unit #121), Pond-Cypress Gum Swamps (Unit #78), Coastal Plain Fresh Water Emergent (Unit #380), Tidal Marsh (Unit #3), and Peatland Atlantic White Cedar (Unit #41). For these cover classes over 20% of the statewide acreage occurs on NWR lands.

Table 1. Acres of the Land Cover Classes Representing Natural Vegetation Types Mapped on Each of the National Wildlife Refuges in North Carolina.

Map Unit	Land Cover Class	Alligator	Cedar Island	Curruck	Great Dismal	Mackay Island	Mattamuskeet	Pea Island	Pee Dee	Pocosin Lakes	Roanoke River	Swan-quarter	State Total	% on Refuge Lands
3	Tidal Marsh	6,352	10,225	1,300	4,470	40,638	1,859	487	<1	11,355	226,997	35	35	
15	Seepage and Streamhead Swamps	1,408	21		6,010		92	2,580		9	46	129,210	8	
17	Maritime Forests and Hammocks	989	6	240		4	105	95		53	31,009	5	5	
30	Cypress-Gum Floodplain Forests	2,585	1		1,073	889	1,861	3,076	7,476	17	537,952	3	3	
41	Peatland Atlantic White-Cedar Forest	18,989		24	1,446	62	780	5	3,494	20	925	69,433	37	
42	Xeric Longleaf Pine	211		1	28	267	1	1	<1	32	693,248	<1	<1	
49	Coastal Plain Oak Bottomland Forest	675	185					672	3,601	21	519,175	1	1	
50	Coastal Plain Mixed Bottomland Forests	2,143		1	8	39	296		2,285	1,421	320,712	2	2	
60	Sand										17,279	0	0	
63	Coastal Plain Mesic Hardwood Forests	50	<1		22	20		86	6	1	193,294	<1	<1	
67	Wet Longleaf or Slash Pine Savanna	28	409				14	13	4	116,695	<1	<1	<1	
75	Tidal Swamp Forest	3,543		3	280	252		2,481	3,287	35	91,251	11	11	
78	Pond-Cypress-Gum Swamps, Savannas			2		621		<1			2,652	24	24	
87	Pocosin Woodlands and Shrublands	58,014	2,138	222		74		44,658	26	1,162	1,145,391	9	9	
97	Mesic Longleaf Pine	31									248,803	<1	<1	
121	Maritime Pinelands	11,114		93	<1	118	416	19	3752	14	438	79,747	20	20
124	Maritime Scrubs and Tidal Shrublands			167							10,962	4	4	
125	Intertidal Wooded Depression Swamp			7							172	5	5	
138	Coastal Plain Dry to Dry-Mesic Oak Forests				<1	1			98	365	341,667	<1	<1	
158	Coastal Plain Nonriverine Wet Flat Forests								27,127	232	767	524,573	13	13
220	Piedmont Xeric Pine Forests	24,453	141		17,218	70	375		146		231,675	<1	<1	
222	Piedmont Dry-Mesic Pine Forests								1,238		988,286	<1	<1	
226	Piedmont Xeric Woodlands								114		682,794	<1	<1	
228	Piedmont/Min Dry-Mesic Oak & Hardwood Forests								721		2,425,193	<1	<1	
230	Piedmont Mesic Forest								325		814,648	<1	<1	
232	Xeric Pine-Hardwood Woodlands and Forests								143		284,664	<1	<1	
238	Piedmont/Mountain Submerged Aquatic Vegetation										7,423	0	0	
239	Piedmont/Mountain Emergent Vegetation								16		3,742	<1	<1	
267	Riverbank Shrublands								32		4,184	<1	<1	
269	Floodplain Wet Shrublands								24		13,243	<1	<1	
371	Maritime Grasslands								669		26,166	3	3	
372	Intertidal Herbaceous Wetlands								8		1,422	1	1	
378	Ocean Beaches			264					379		13,380	5	5	
380	Coastal Plain Fresh Water Emergent	5,392	6	3	28	6	2,525	1	3,049	26	61	45,082	25	25
382	Dry Mesic Oak Pine Forests	473			<1	4			961	107	463	1,459,547	<1	<1
383	Coastal Plain Mixed Successional Forest								2,293	9	48	330,367	<1	<1
384	Piedmont/Mountain Mixed Bottomland Forests								64		189,343	<1	<1	

For which cover types do National Wildlife Refuges provide the majority of the Status 1 and 2 lands?

NWR lands represent over 50% of the protected acreage for five vegetation types in North Carolina (Table 2).

Seepage and Streamhead Swamps (Map Unit #15)_Includes extensive peat flats in the coastal plain, dominated by swamp tupelo, maples, and Atlantic white-cedar alliances.



Atlantic White-Cedar Forest (Map Unit # 41) Dense stands of Atlantic white cedar with saturated hydrology.



Maritime Pinelands (Map Unit # 121) Loblolly pine forests and woodlands of the outer coastal plain. Also known as estuarine fringe forest.

Table 2. Cover Class Acreage by Manager and GAP Status

	National Wildlife Refuges	U.S. FWS Lands	Other Federal	State	Local	NGOs	Private	Total Acreage	% of Total Acreage
Seepage Swamps and Streamhead Swamps (Map Unit # 15)									
Status 1		87		6,877		91		6,854	4%
Status 2	33,595	36		4,496	1	75		38,206	25%
Status 3			2,442	1,702		303		4,447	3%
Status 4				18			103,116	103,133	68%
								152,640	100%
Peatland Atlantic White-Cedar Forest (Map Unit # 41)									
Status 1		1		3,297		38		3,359	5%
Status 2	25,718	2		3,034	11	357	16	29,138	42%
Status 3			4,654	285		63		5,002	7%
Status 4				10			31,925	31,935	46%
								69,433	100%
Coastal Plain Oak Bottomland Forest (Map Unit # 50)									
Status 1				1,298		355		1,673	1%
Status 2	6,215	126		4,298	16	885	73	11,613	4%
Status 3				1,511	15	1,102		2,628	3%
Status 4				121	34		297,703	297,858	93%
								320,712	100%
Tidal Swamp Forest (Map Unit # 75)									
Status 1				3,849		251		4,100	4%
Status 2	9,879	55		4,379	9	1,160	169	15,551	17%
Status 3			2,343	806		3,895		7,043	8%
Status 4							64,457	64,457	71%
								91,251	100%
Maritime Pinelands (Map Unit # 121)									
Status 1				589		18		607	1%
Status 2	15,963	6		2,854	2	295	7	20,091	25%
Status 3				33		51		2,937	4%
Status 4				44			56,068	56,112	70%
								79,747	100%

Coastal Plain Oak Bottomland Forest (Map Unit # 50) Includes forests dominated by a variety of hardwood species, including swamp chestnut oak, swamp red oak, overcup oak, cherrybark oaks, sweetgum, cottonwood, red maple.



Tidal Swamp Forest (Map Unit # 75) Swamp tupelo dominated forest with or without black tupelo and/or cypress trees. Restricted to the tidal zones in the coastal plain.

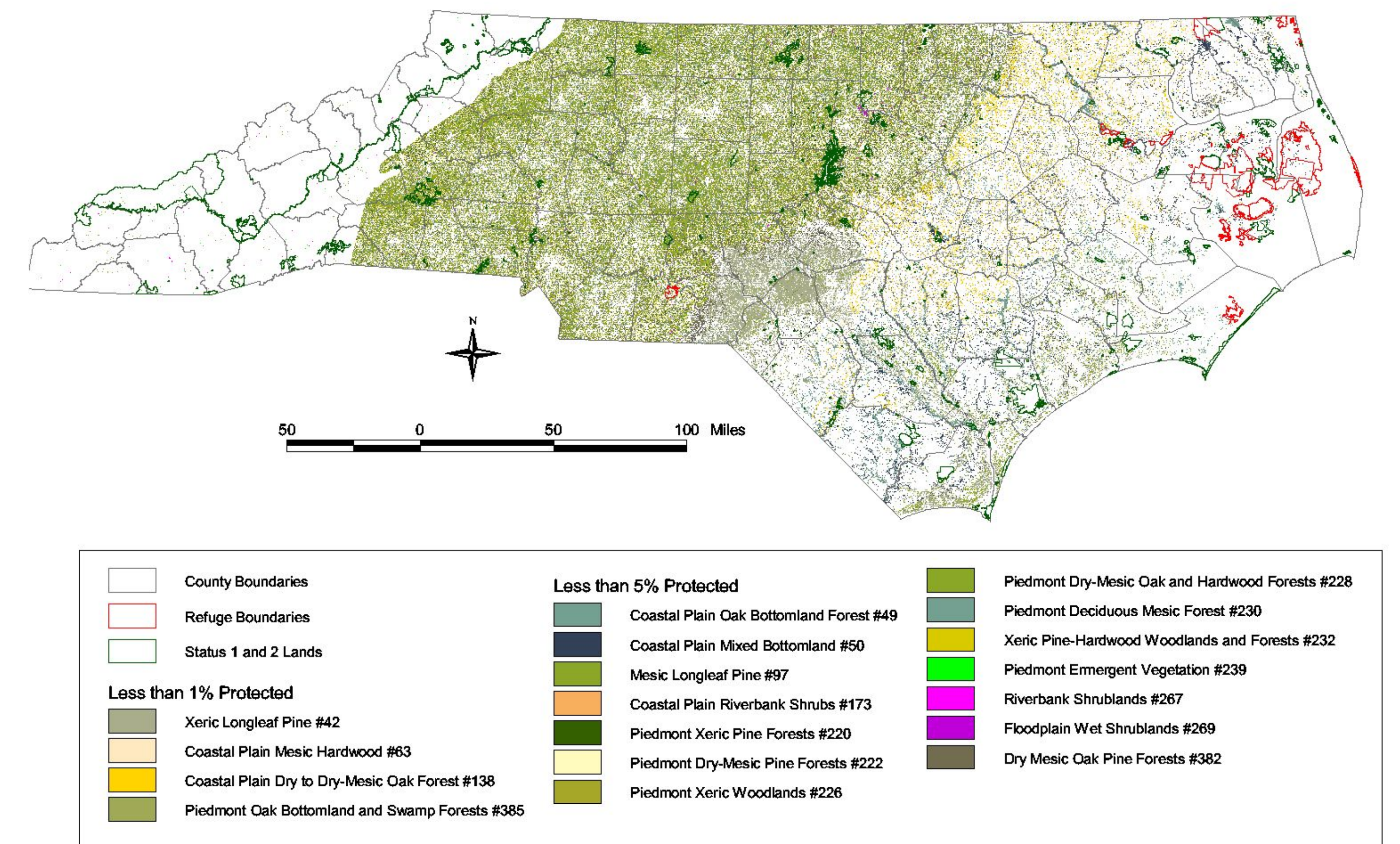
Which cover types are under-represented statewide?

To address this question we have identified the natural vegetation types with < 1% and those with < 5% of the statewide acreage on Status 1 and 2 lands (Figure 4).

Four natural cover types had less than 1% of their acreage on Status 1 and 2 lands and fourteen had less than 5% protected. These under-represented cover types generally fall into five categories.

- Longleaf Pine Forest of the Coastal Plain (#42, #67, #97)
- Bottomland of the Coastal Plain and Piedmont (#49, #50, #385)
- Mesic Forests - Statewide (#63, #230, #520)
- Piedmont Upland Forests (#220, #226, #228, #230, #232)
- Emergent Wetland Types (#238, #239, #267, #269)

Figure 4. Natural Land Cover Classes that are Under-represented in the Existing Status 1 and 2 Lands. Under-representation defined as less than 5% of the statewide distribution on Status 1 or 2 lands.



Conclusions:

NWR lands contribute primarily to the conservation of Coastal Plain cover types because of their distribution in the state. Pee Dee National Wildlife Refuge being the exception.

NWR lands are primarily responsible for the protection of five of the states natural vegetations types.

At a threshold of 5%, eighteen cover classes would be considered under-represented in the state, with the majority of the acreage for those classes concentrated in the Piedmont and Sandhills (Inner Coastal Plain).

Figure 3. Land Cover Types with Greater than 50% of the Protected Acres on National Wildlife Refuge Lands.

