Implementing CHJV Forest and Woodland Habitat Objectives:
Recommendations for Tennessee

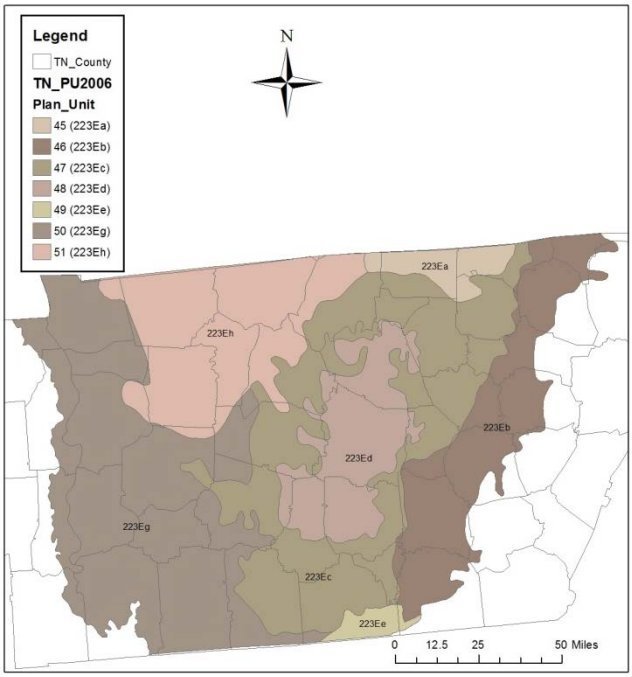
Overview

The Central Hardwoods Joint Venture (CHJV) is a partnership of state and federal government agencies and non-governmental organizations who work together to ensure the long-term viability of native bird populations within the Central Hardwoods Bird Conservation Region (CHBCR). The CHJV pursues this mission by striving towards 2 primary goals: (1) implement conservation actions based on sound science and principals of adaptive management, and (2) target landscapes with the greatest ecological and socioeconomic potential to support viable populations of priority birds. In pursuit of these goals the CHJV Staff and cooperators have developed a suite of decision support tools (DSTs) aimed at assessing habitat conditions, linking bird populations to habitat condition, forecasting potential future habitat conditions, and simulating population impacts of conservation scenarios.

CHJV partners have produced population objectives for priority forest and woodland associated bird species. CHJV staff have used the DSTs to estimate the amount of habitat restoration needed to support those populations and allocated the habitat objectives to State sub-regions and the conservation actors (i.e. agencies) within them. Uncertainty in the allocation process requires an iterative and adaptive approach to translating CHBCR objectives into an implementation plan (i.e. on-the-ground projects). This document builds off the Implementation Framework document by summarizing DST and other information to help partners within the Tennessee sub-region develop the strategic (where to work) and tactical (what work to do) components of their implementation plan.

Planning Units

The CHJV uses Bailey's ecological subsections as planning units. Tennessee is divided into 7 planning units (map at right). Table 1 ranks each unit relative to others within Tennessee on attributes relevant to conservation planning, and each attribute is mapped in Figures 1-10. Table 2 lists the calculated habitat objectives by natural community type, along with information on forested area, proportion of public ownership and an estimate of area in condition for each community.



From a CHBCR perspective, Tennessee has some relatively important areas for the woodland, forest, and riparian bird groups. Planning Unit 50 (Western Highland Rim – 223Eg) was identified as a source landscape for Wood Thrush, Worm-eating Warblers, and Prairie Warblers by the CHJV population viability model. Relative to other units in Tennessee and across the BCR, this unit currently has moderate-to-high levels of forest cover, public ownership, natural land cover types, as well as low levels of fragmentation. This unit shows relatively high levels of forest loss, but much of this may be timber harvest and not true conversion. Urbanization is likely to be an increasing threat across all of the Tennessee sub-region.

Table 1. The 7 planning units (i.e. landscapes) within the Tennessee sub-region and their relative rank based on attributes relevant to conservation planning. Units are ranked from “1” (best) to “7” (worst) relative to conservation perspective. A composite rank will not be calculated until partners determine which attributes are most important.

Plan Unit	Subsection	Short Name	ST	Public [a]	Natural-ness [a]	In Condition [a]	Forest Proportion [a]	GPI [a]	Forest Loss ('01-'06) [a]	Urban 2030 [a]	Ensemble Model Scores [a]		
											Woodland	Forest	Riparian
45	223Ea	E. Highland Rim	TN	7	2	1	2	2	1	6	1	3	2
46	223Eb	E. Karst Plain	TN	3	5	5	5	5	5	2	6	5	4
47	223Ec	Outer Nashville Basin	TN	4	3	3	4	4	4	4	3	4	5
48	223Ed	Inner Nashville Basin	TN	5	7	7	6	6	6	5	5	6	6
49	223Ee	Highland Rim	TN	6	6	6	7	7	2	7	7	7	7
50	223Eg	W. Pennyroyal Karst Plain	TN	1	1	2	1	1	7	1	4	1	3
51	223Eh	Pennyroyal Karst Plain	TN	2	4	4	3	3	3	3	2	2	1

[a] Attributes are defined as the quantity of protected lands (Public), overall landscape conditions (Naturalness), extant forest community conditions (In Condition), quantity of forested (i.e. restorable) lands (Forest Proportion), forest fragmentation / avian productivity (GPI), forest loss from 2001-2006 (Loss), urbanization threat (Urban 2030), and current capacity-productivity weighted ensemble model scores for suites of birds. Full definitions are available in the companion Framework document.

Table 2. CHJV Habitat Objectives (targets) by planning unit and natural community type for public lands and for the entire units, along with information on forested area, proportion of public ownership and an estimate of area in condition for each community.

Plan Unit	Acreage Estimate Class	Savanna / Barrens	Glade / Savanna Mosaic (< 20% canopy)	Oak Open Woodland (20-50% canopy)	Oak Closed Woodland (50-80% canopy)	Pine / Bluestem Open Woodland (20-50% canopy)	Pine / Oak Closed Woodland (50-80% canopy)	Forest (> 80% canopy)	Floodplain Forests	Total Area
45	Forested/Restorable	-	-	9,393	50,231	-	-	89,083	18,121	166,829
	Protected	-	-	3	9	-	-	6	1	19
	Plan Unit Target (10 sp)	-	-	589	3,300	-	-	11,744	1,991	17,624
	Plan Unit Target (21 sp)	-	-	1,314	7,561	-	-	15,323	5,763	29,961
	Public Target (10 sp)	-	-	3	9	-	-	6	1	19
	Public Target (21 sp)	-	-	3	9	-	-	6	1	19
	In Character/Restored	-	-	20	-	-	-	85,894	15	85,929
	Public In Character	-	-	-	-	-	-	5	-	5
46	Forested/Restorable	80,499	0	129,105	82,530	-	-	181,738	71,562	545,435
	Protected	29,819	-	8,192	3,882	-	-	6,395	9,989	58,276
	Plan Unit Target (10 sp)	22,142	6	20,982	5,627	-	-	29,393	12,304	90,453
	Plan Unit Target (21 sp)	49,445	13	46,760	12,894	-	-	38,350	35,619	183,081
	Public Target (10 sp)	22,142	-	8,192	3,882	-	-	6,395	9,989	50,600
	Public Target (21 sp)	29,819	-	8,192	3,882	-	-	6,395	9,989	58,276
	In Character/Restored	3,773	-	1	-	-	-	164,336	16,697	184,806
	Public In Character	820	-	-	-	-	-	4,806	3,304	8,931
47	Forested/Restorable	3,641	1,084	133,248	439,965	-	-	593,800	107,932	1,279,670
	Protected	1,293	88	8,024	14,962	-	-	17,620	15,832	57,819
	Plan Unit Target (10 sp)	1,505	946	15,078	34,713	-	-	86,598	25,862	164,701
	Plan Unit Target (21 sp)	3,360	2,076	33,603	79,542	-	-	112,989	74,869	306,439
	Public Target (10 sp)	1,293	88	8,024	14,962	-	-	17,620	15,832	57,819
	Public Target (21 sp)	1,293	88	8,024	14,962	-	-	17,620	15,832	57,819
	In Character/Restored	318	-	2,626	-	-	-	475,400	5,410	483,753
	Public In Character	36	-	187	-	-	-	10,102	409	10,734

Plan Unit	Acreage Estimate Class	Savanna / Barrens	Glade / Savanna Mosaic (< 20% canopy)	Oak Open Woodland (20-50% canopy)	Oak Closed Woodland (50-80% canopy)	Pine / Bluestem Open Woodland (20-50% canopy)	Pine / Oak Closed Woodland (50-80% canopy)	Forest (> 80% canopy)	Floodplain Forests	Total Area
48	Forested/Restorable	5,586	61,479	92,661	95,699	-	-	54,960	81,971	392,356
	Protected	654	2,909	8,246	4,253	-	-	962	8,506	25,530
	Plan Unit Target (10 sp)	2,484	44,089	9,629	8,110	-	-	10,954	18,615	93,882
	Plan Unit Target (21 sp)	5,547	96,802	21,460	18,583	-	-	14,293	53,889	210,573
	Public Target (10 sp)	654	2,909	8,246	4,253	-	-	962	8,506	25,530
	Public Target (21 sp)	654	2,909	8,246	4,253	-	-	962	8,506	25,530
	In Character/Restored	356	-	143	-	-	-	30,733	2,830	34,062
	Public In Character	24	-	-	-	-	-	207	307	538
49	Forested/Restorable	6,889	-	1,685	6,021	-	-	10,842	6,742	32,178
	Protected	15	-	32	312	-	-	426	49	834
	Plan Unit Target (10 sp)	3,172	-	307	640	-	-	2,576	808	7,504
	Plan Unit Target (21 sp)	7,083	-	685	1,467	-	-	3,361	2,340	14,936
	Public Target (10 sp)	15	-	32	312	-	-	426	49	834
	Public Target (21 sp)	15	-	32	312	-	-	426	49	834
	In Character/Restored	557	-	-	-	-	-	8,806	2,007	11,370
	Public In Character	-	-	-	-	-	-	319	-	319
50	Forested/Restorable	37,691	56	171,445	998,980	-	-	709,735	224,837	2,142,745
	Protected	4,731	-	10,604	72,701	-	-	44,235	38,146	170,417
	Plan Unit Target (10 sp)	8,277	68	14,987	54,913	-	-	71,419	32,526	182,191
	Plan Unit Target (21 sp)	18,484	150	33,400	125,828	-	-	93,184	94,162	365,208
	Public Target (10 sp)	4,731	-	10,604	54,913	-	-	44,235	32,526	147,009
	Public Target (21 sp)	4,731	-	10,604	72,701	-	-	44,235	38,146	170,417
	In Character/Restored	2,479	-	1,309	-	-	-	649,951	32,235	685,975
	Public In Character	40	-	96	-	-	-	37,550	8,615	46,301

Plan Unit	Acreage Estimate Class	Savanna / Barrens	Glade / Savanna Mosaic (< 20% canopy)	Oak Open Woodland (20-50% canopy)	Oak Closed Woodland (50-80% canopy)	Pine / Bluestem Open Woodland (20-50% canopy)	Pine / Oak Closed Woodland (50-80% canopy)	Forest (> 80% canopy)	Floodplain Forests	Total Area
51	Forested/Restorable	70,812	-	73,246	347,446	-	-	239,550	100,488	831,542
	Protected	50,029	-	2,522	20,012	-	-	10,980	16,619	100,161
	Plan Unit Target (10 sp)	19,049	-	9,058	25,505	-	-	27,255	12,903	93,768
	Plan Unit Target (21 sp)	42,537	-	20,187	58,441	-	-	35,560	37,352	194,078
	Public Target (10 sp)	19,049	-	2,522	20,012	-	-	10,980	12,903	65,465
	Public Target (21 sp)	42,537	-	2,522	20,012	-	-	10,980	16,619	92,669
	In Character/Restored	3,031	-	761	-	-	-	211,913	6,025	221,730
	Public In Character	2,335	-	109	-	-	-	8,190	793	11,428
Total	Forested/Restorable	205,119	62,620	610,783	2,020,871	-	-	1,879,708	611,653	5,390,755
	Protected	86,542	2,997	37,622	116,131	-	-	80,624	89,140	413,056
	Plan Unit Target (10 sp)	56,629	45,110	70,630	132,808	-	-	239,938	105,009	650,123
	Plan Unit Target (21 sp)	126,457	99,041	157,407	304,316	-	-	313,060	303,994	1,304,276
	Public Target (10 sp)	47,885	2,997	37,622	98,342	-	-	80,624	79,805	347,275
	Public Target (21 sp)	79,050	2,997	37,622	116,131	-	-	80,624	89,140	405,564
	In Character/Restored	10,514	-	4,860	-	-	-	1,627,032	65,219	1,707,625
	Public In Character	3,256	-	393	-	-	-	61,180	13,428	78,256

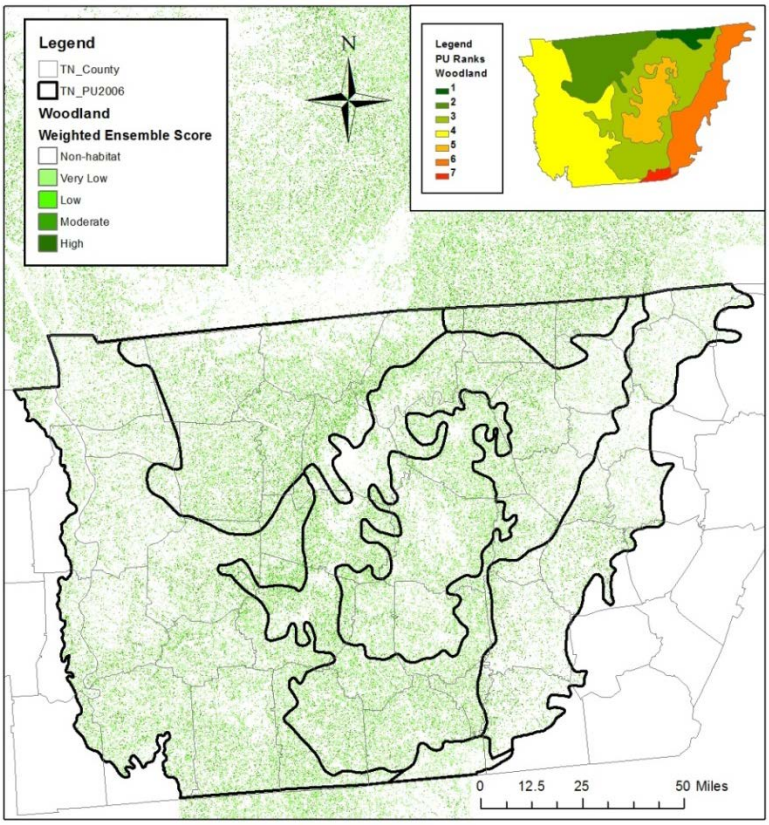


Figure 1. (Q2) Raw scores from the combination of Woodland species habitat models (n=7) weighted by the priority class of each species. Mean scores for each planning unit were used to produce ranks (inset) from high (1) to low (7).

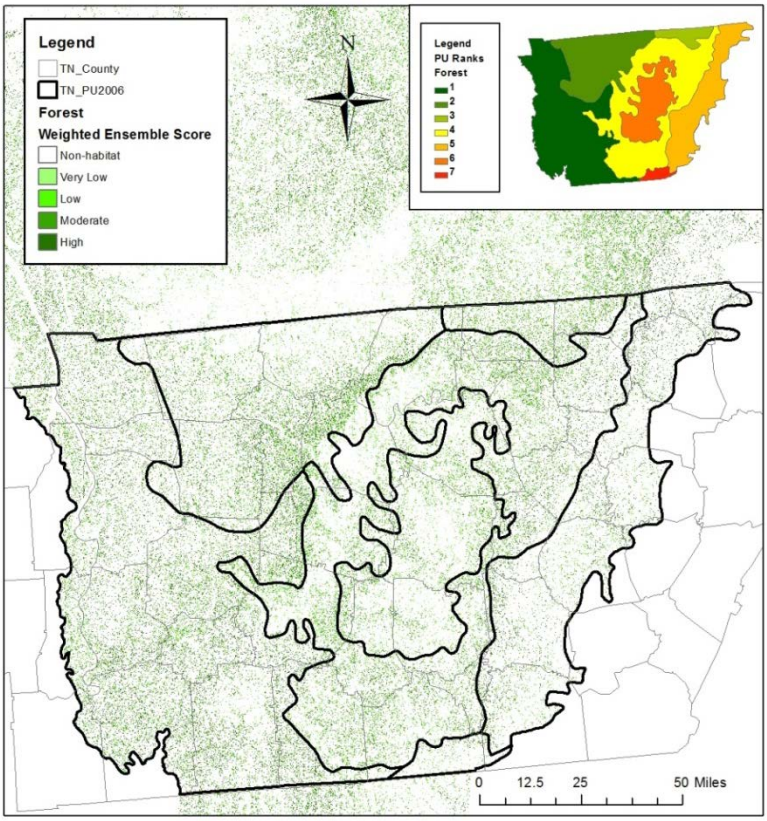


Figure 2. (Q2) Raw scores from the combination of Forest species habitat models (n=7) weighted by the priority class of each species. Mean scores for each planning unit were used to produce ranks (inset) from high (1) to low (7).

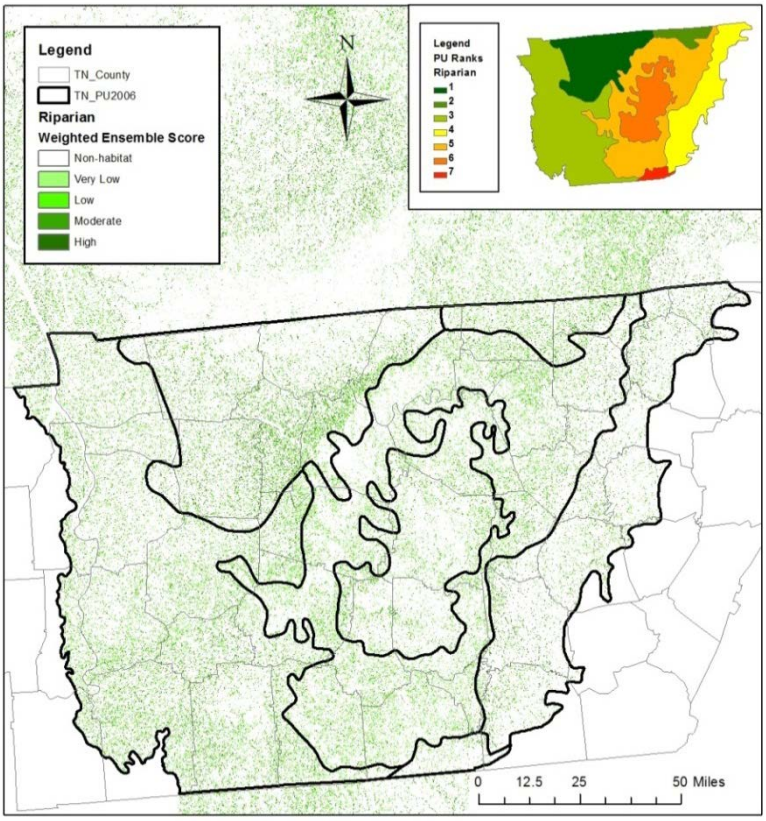


Figure 3. (Q2) Raw scores from the combination of Riparian species habitat models (n=4) weighted by the priority class of each species. Mean scores for each planning unit were used to produce ranks (inset) from high (1) to low (7).

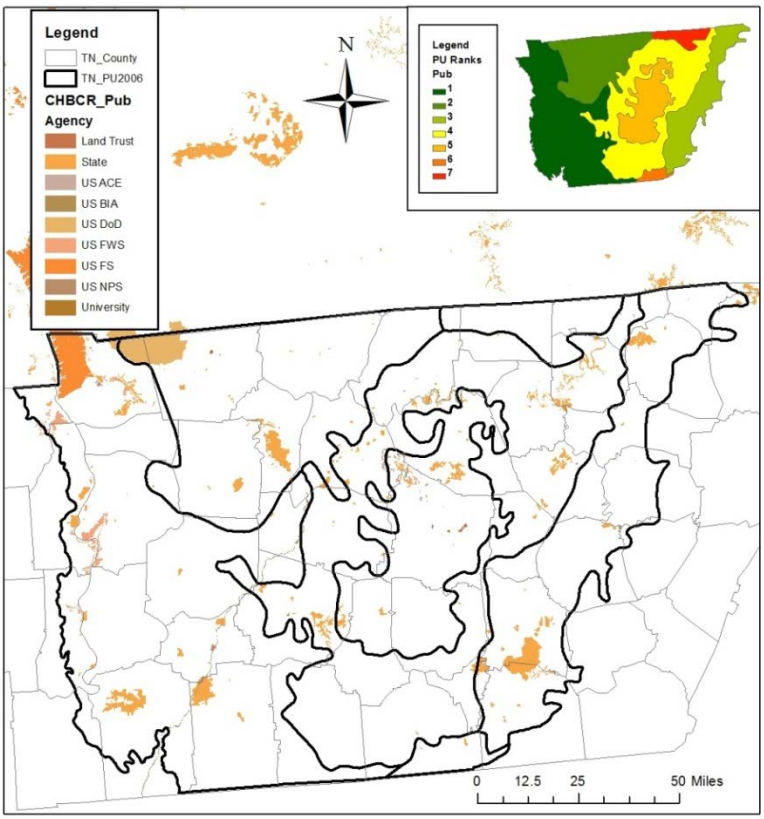


Figure 4. (Q3) Distribution of public lands within the Tennessee Sub-region by agency or organization. Total area of public ownership for each planning unit was used to produce ranks (inset) from high (1) to low (7).

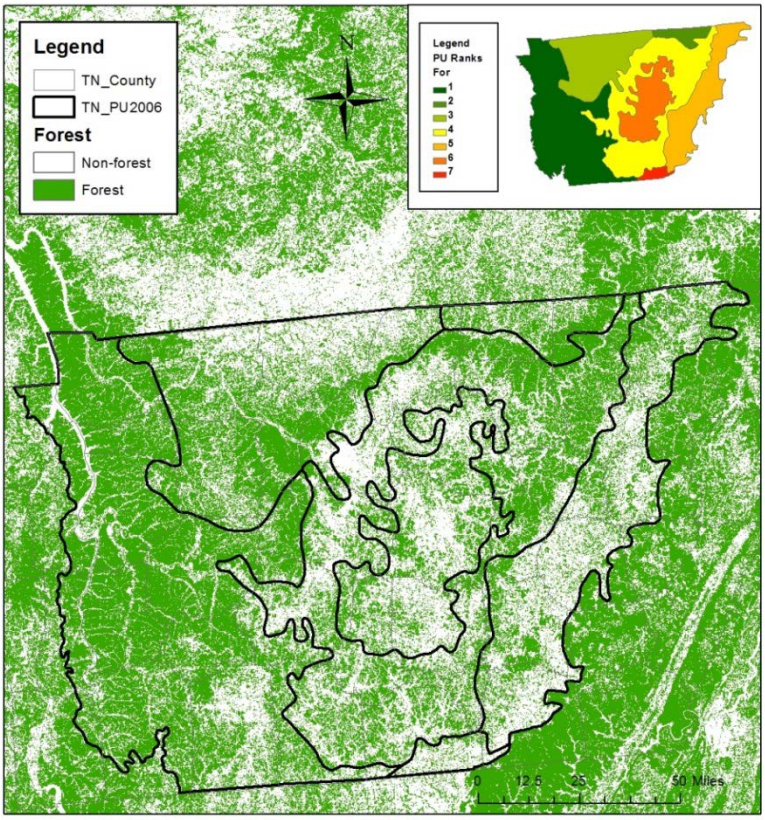


Figure 5. (Q4) Distribution of lands classified as a forested type within the Tennessee Sub-region by the 2006 NLCD. Proportion of forested land for each planning unit was used to produce ranks (inset) from high (1) to low (7).

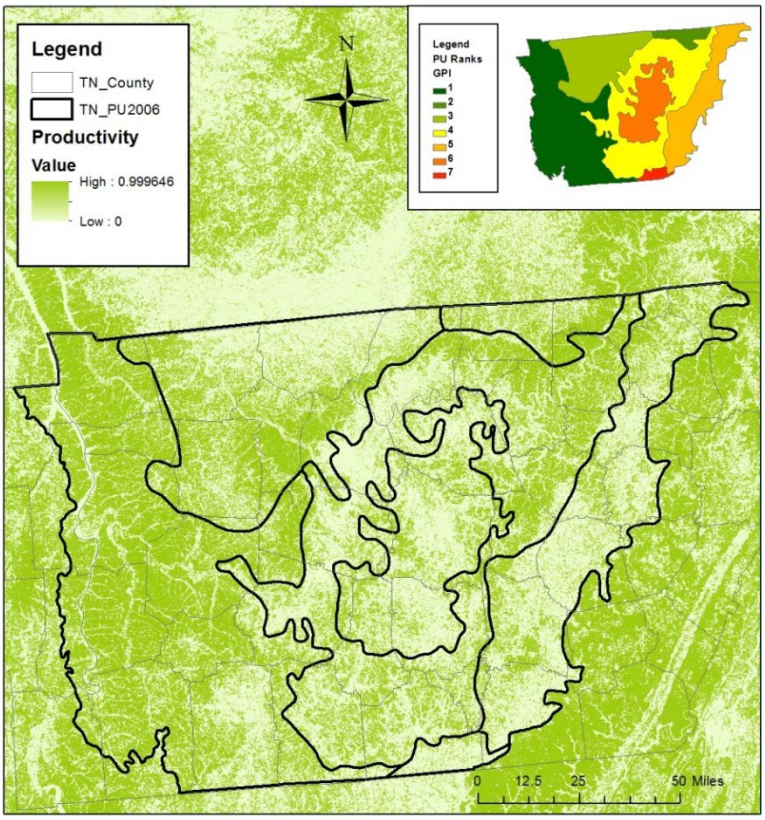


Figure 6. (Q4) Fragmentation of forested lands as measured by the General Productivity Index within the TN Sub-region. Mean index score on forested lands for each planning unit was used to produce ranks (inset) from high (1) to low (7).

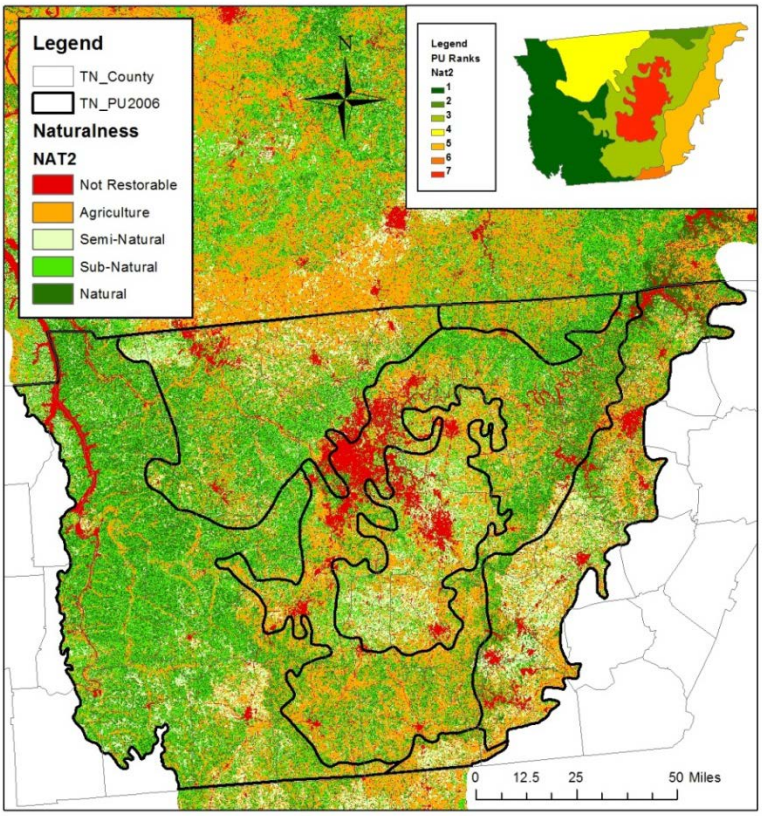


Figure 7. (Q4) Classification of the relative naturalness of lands within the Tennessee Sub-region following Ferrari et al. 2008. Proportion of each planning unit in the "Natural" class was used to produce ranks (inset) from high (1) to low (7).

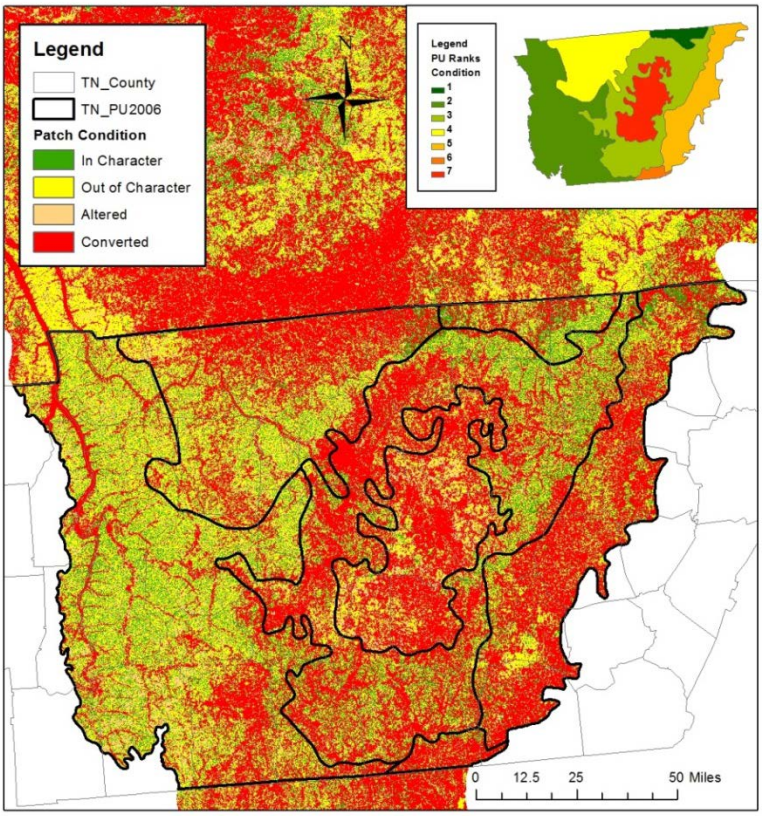


Figure 8. (Q4) Comparison between current and expected landscape patch conditions within the Tennessee Sub-region. Proportion of each planning unit in the "In Character" class was used to produce ranks (inset) from high (1) to low (7).

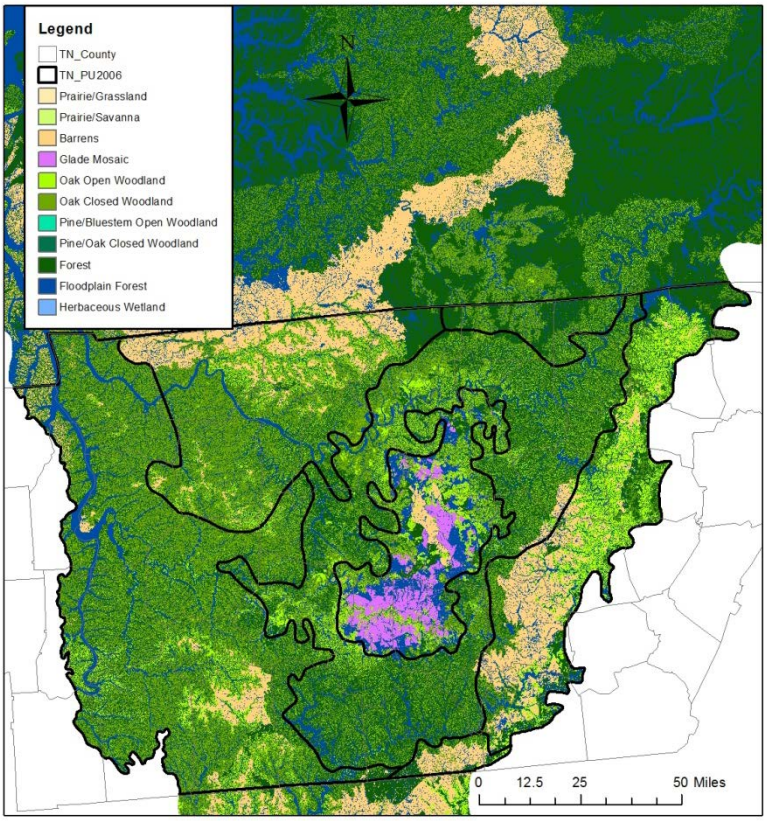


Figure 9. (Q5) The distribution of sites suitable for the restoration of broad natural communities within the TN Sub-region.

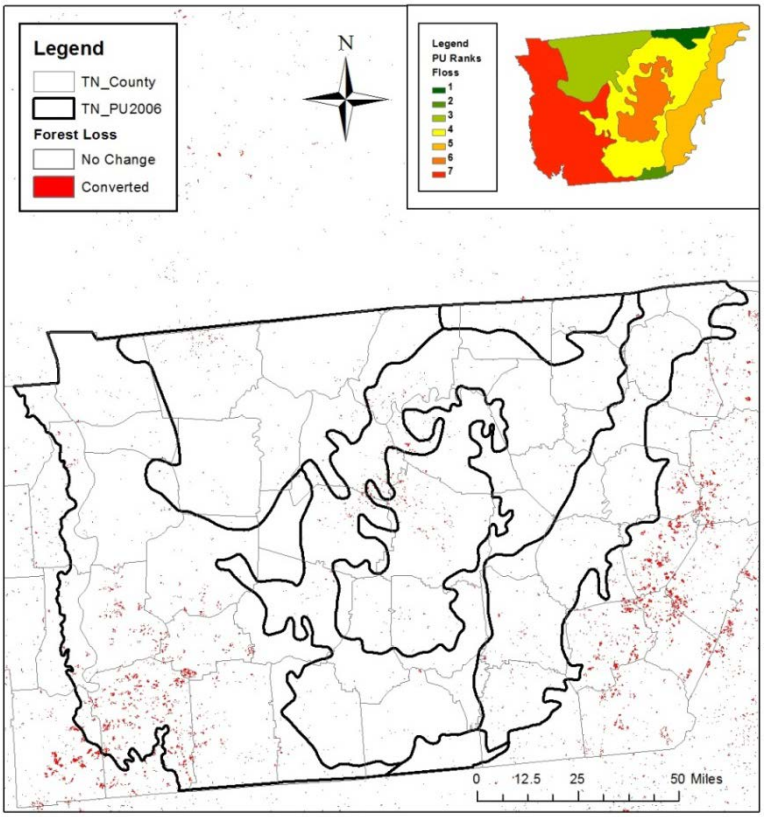


Figure 10. (Q6) Locations where cover class changed from a forest type to a non-forest type in 2006 within the TN Sub-region. Proportion of forest converted in each planning unit was used to produce ranks (inset) from low (1) to high (7).

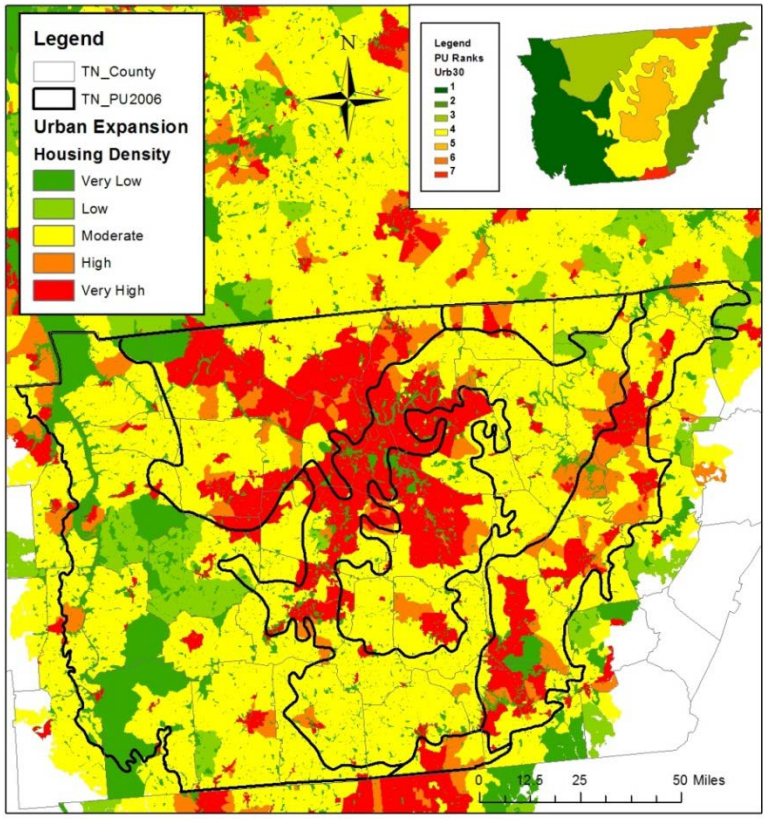


Figure 11. (Q6) The relative impact of current and projected housing density on management actions within the TN Sub-region. Proportion of each planning unit in the "Very Low" class was used to produce ranks (inset) from high (1) to low (7).