Implementing CHJV Forest and Woodland Habitat Objectives:
Recommendations for Arkansas

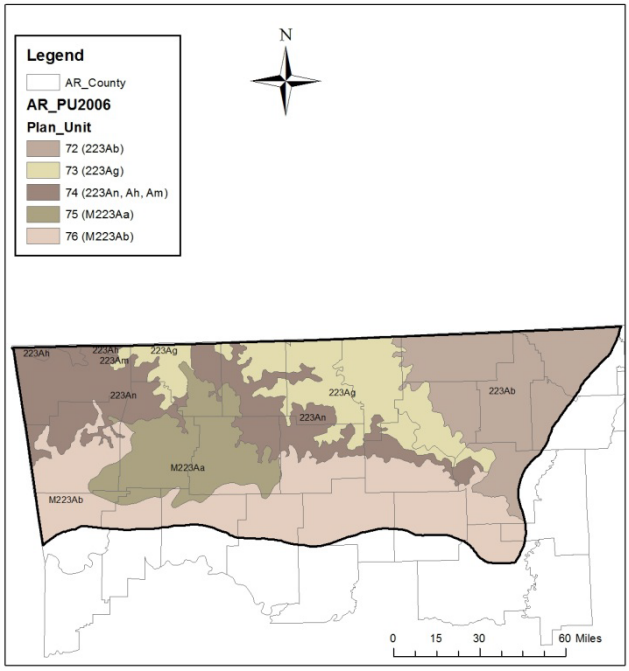
Overview

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 Arkansas 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. Arkansas is divided into 5 planning units (map at right). Table 1 ranks each unit relative to others within Arkansas 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, Arkansas has some relatively important areas for the woodland, forest, and riparian bird groups. Planning Units 73, 75, and 76 were identified as source landscapes for Wood Thrush, Worm-eating Warblers, and Prairie Warblers by the CHJV population viability model. These units and the Arkansas sub-region in general, have high levels of forest, public ownership, natural land cover types, as well as low levels of fragmentation and urbanization pressure. However, urbanization is intensifying in some areas and Arkansas has some of the highest rates of forest loss for the BCR.

Table 1. The 5 planning units (i.e. landscapes) within the Arkansas sub-region and their relative rank based on attributes relevant to conservation planning. Units are ranked from “1” (best) to “5” (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
72	223Ab	Central Plateau	AR	5	5	5	4	4	3	3	1	4	4
73	223Ag	White River Hills	AR	3	3	3	3	3	2	4	2	3	1
74	223An&Ah&Am	Springfield Plateau	AR	4	4	1	5	5	5	5	3	5	5
75	M223Aa	Boston Mountains	AR	2	1	2	1	1	1	1	4	1	3
76	M223Ab	Boston Hills	AR	1	2	4	2	2	4	2	5	2	2

[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
72	Forested/Restorable	2	239	102,531	319,330	12	286,538	220,160	58,868	987,680
	Protected	-	-	208	8,952	-	622	3,842	274	13,897
	Plan Unit Target (10 sp)	2	142	10,656	17,817	3	32,234	31,297	10,200	102,351
	Plan Unit Target (21 sp)	3	313	22,177	40,826	49	105,903	40,834	29,529	239,635
	Public Target (10 sp)	-	-	208	8,952	-	622	3,842	274	13,897
	Public Target (21 sp)	-	-	208	8,952	-	622	3,842	274	13,897
	In Character/Restored	-	185	-	25,270	-	-	973	1	26,430
	Public In Character	-	-	-	115	-	-	9	-	125
73	Forested/Restorable	1,292	60,517	92,915	250,853	-	195,414	343,092	13,835	957,918
	Protected	71	768	2,000	23,780	-	49,102	61,253	5,842	142,816
	Plan Unit Target (10 sp)	458	43,169	9,694	16,620	-	15,166	44,495	3,114	132,716
	Plan Unit Target (21 sp)	1,001	94,780	20,176	38,083	-	49,829	58,055	9,015	270,939
	Public Target (10 sp)	71	768	2,000	16,620	-	15,166	44,495	3,114	82,235
	Public Target (21 sp)	71	768	2,000	23,780	-	49,102	58,055	5,842	139,618
	In Character/Restored	82	38,989	-	10,328	-	-	359	0	49,759
	Public In Character	0	621	-	50	-	-	70	-	741
74	Forested/Restorable	57,763	497	128,542	301,245	-	38,089	225,065	6,699	757,900
	Protected	3,820	65	11,392	45,394	-	5,889	42,737	5,366	114,664
	Plan Unit Target (10 sp)	28,010	440	23,964	26,232	-	3,152	30,406	1,335	113,539
	Plan Unit Target (21 sp)	61,264	966	49,874	60,109	-	10,355	39,672	3,864	226,104
	Public Target (10 sp)	3,820	65	11,392	26,232	-	3,152	30,406	1,335	76,403
	Public Target (21 sp)	3,820	65	11,392	45,394	-	5,889	39,672	3,864	110,097
	In Character/Restored	4,184	400	-	83,819	-	-	22,911	-	111,315
	Public In Character	39	57	-	3,511	-	-	3,637	-	7,245

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
75	Forested/Restorable	318	504	2,352	332,270	-	101,358	379,480	3,194	819,476
	Protected	-	-	8	87,331	-	85,994	150,070	2,176	325,579
	Plan Unit Target (10 sp)	131	861	339	19,546	-	6,868	45,994	700	74,439
	Plan Unit Target (21 sp)	286	1,890	706	44,787	-	22,566	60,011	2,027	132,273
	Public Target (10 sp)	-	-	8	19,546	-	6,868	45,994	700	73,117
	Public Target (21 sp)	-	-	8	44,787	-	22,566	60,011	2,027	129,399
	In Character/Restored	8	244	-	1,726	-	-	48,653	-	50,631
	Public In Character	-	-	-	43	-	-	17,054	-	17,097
76	Forested/Restorable	98	-	155,581	691,238	15,306	333,559	599,166	30,008	1,824,956
	Protected	0	-	11,620	84,880	13,687	256,435	217,828	9,881	594,331
	Plan Unit Target (10 sp)	57	-	15,306	43,555	1,775	22,580	70,888	3,665	157,827
	Plan Unit Target (21 sp)	125	-	31,855	99,802	24,848	74,187	92,491	10,610	333,919
	Public Target (10 sp)	0	-	11,620	43,555	1,775	22,580	70,888	3,665	154,084
	Public Target (21 sp)	0	-	11,620	84,880	13,687	74,187	92,491	9,881	286,747
	In Character/Restored	3	-	-	27,807	-	-	37,430	-	65,239
	Public In Character	-	-	-	836	-	-	7,176	-	8,012
Total	Forested/Restorable	59,473	61,757	481,921	1,894,936	15,318	954,958	1,766,963	112,604	5,347,930
	Protected	3,892	833	25,229	250,338	13,687	398,041	475,730	23,539	1,191,288
	Plan Unit Target (10 sp)	28,657	44,612	59,960	123,770	1,779	80,001	223,080	19,015	580,873
	Plan Unit Target (21 sp)	62,679	97,948	124,789	283,608	24,897	262,839	291,064	55,046	1,202,871
	Public Target (10 sp)	3,892	833	25,229	114,905	1,775	48,389	195,625	9,088	399,736
	Public Target (21 sp)	3,892	833	25,229	207,794	13,687	152,365	254,072	21,888	679,759
	In Character/Restored	4,277	39,818	-	148,951	-	-	110,326	2	303,374
	Public In Character	40	678	-	4,556	-	-	27,947	-	33,220

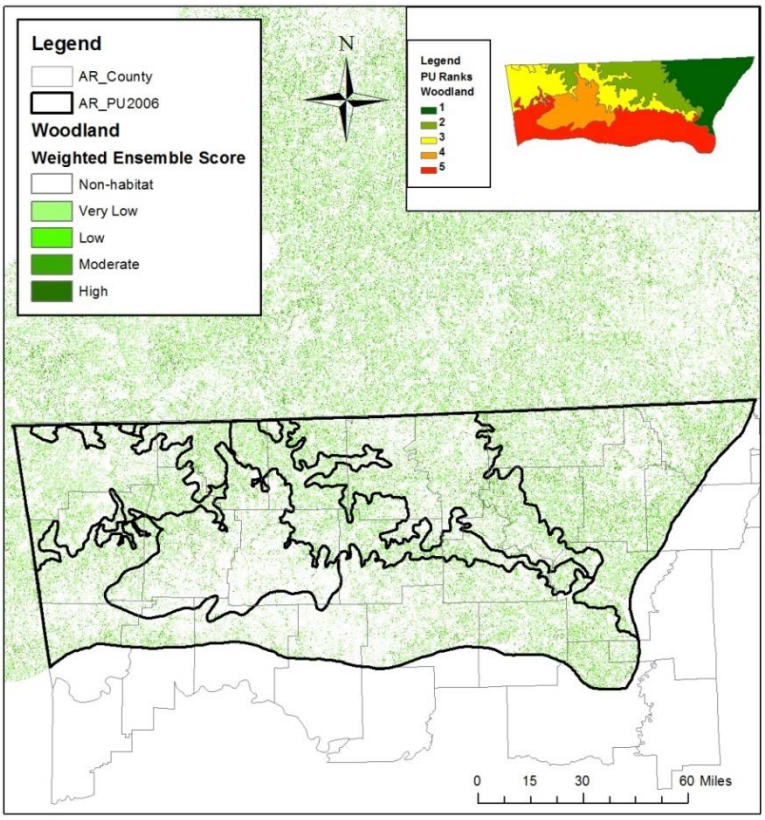


Figure 1. (Q2) Raw scores from the combination of Woodland species habitat models (n=7) weighted by the priority class of each species. Mean scores for each planning unit were used to produce ranks (inset) from high (1) to low (5).

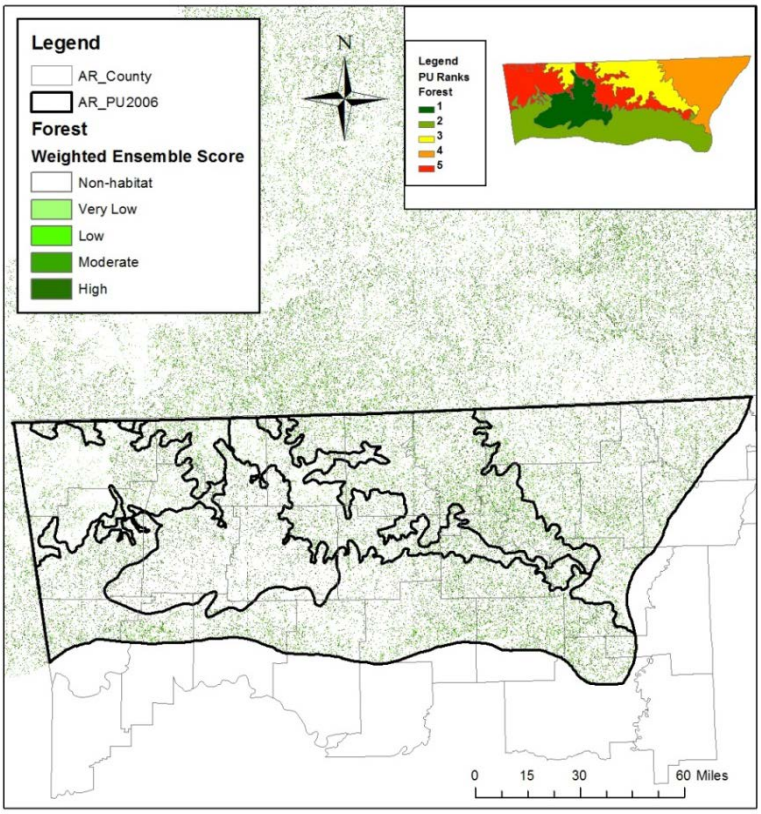


Figure 2. (Q2) Raw scores from the combination of Forest species habitat models (n=7) weighted by the priority class of each species. Mean scores for each planning unit were used to produce ranks (inset) from high (1) to low (5).

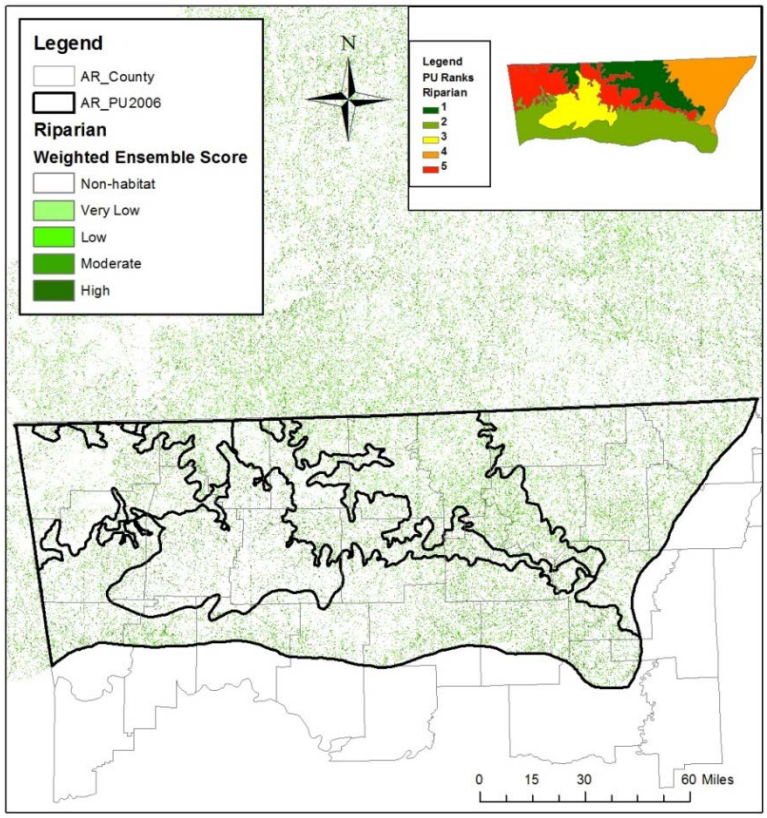


Figure 3. (Q2) Raw scores from the combination of Riparian species habitat models (n=4) weighted by the priority class of each species. Mean scores for each planning unit were used to produce ranks (inset) from high (1) to low (5).

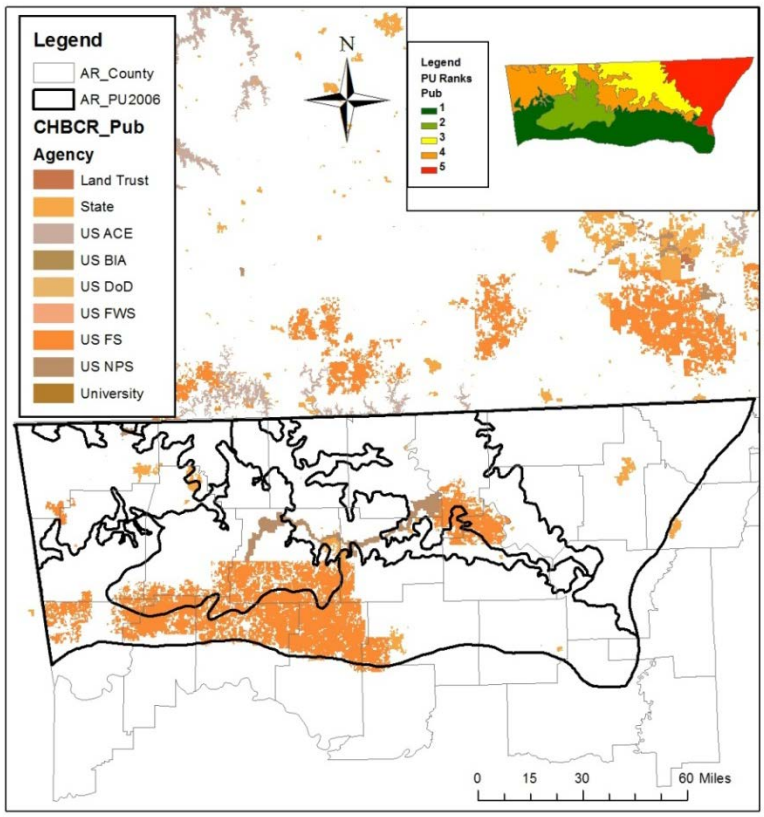


Figure 4. (Q3) Distribution of public lands within the Arkansas Sub-region by agency or organization. Total area of public ownership for each planning unit was used to produce ranks (inset) from high (1) to low (5).

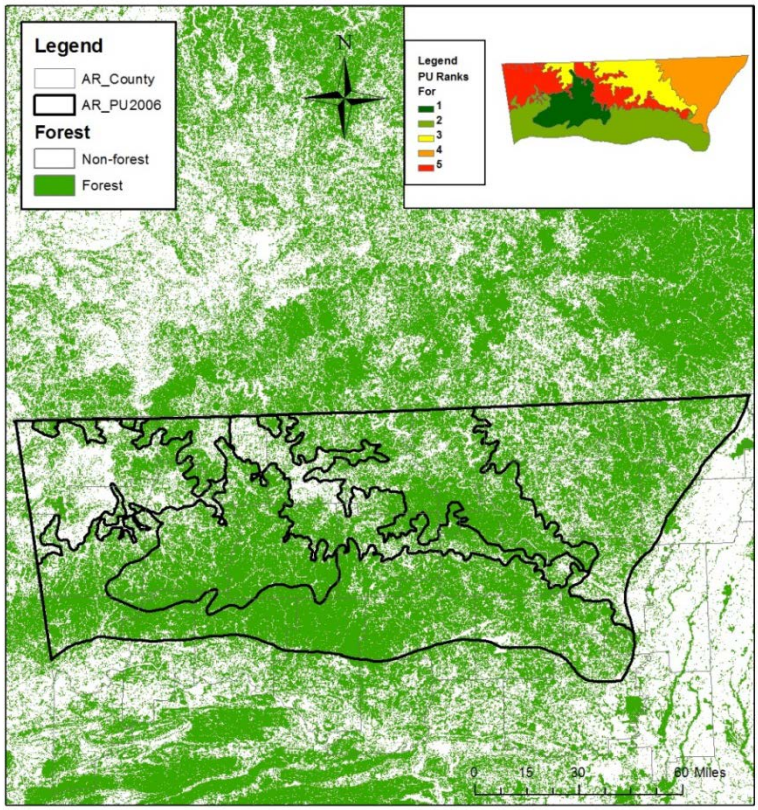


Figure 5. (Q4) Distribution of lands classified as a forested type within the Arkansas Sub-region by the 2006 NLCD. Proportion of forested land for each planning unit was used to produce ranks (inset) from high (1) to low (5).

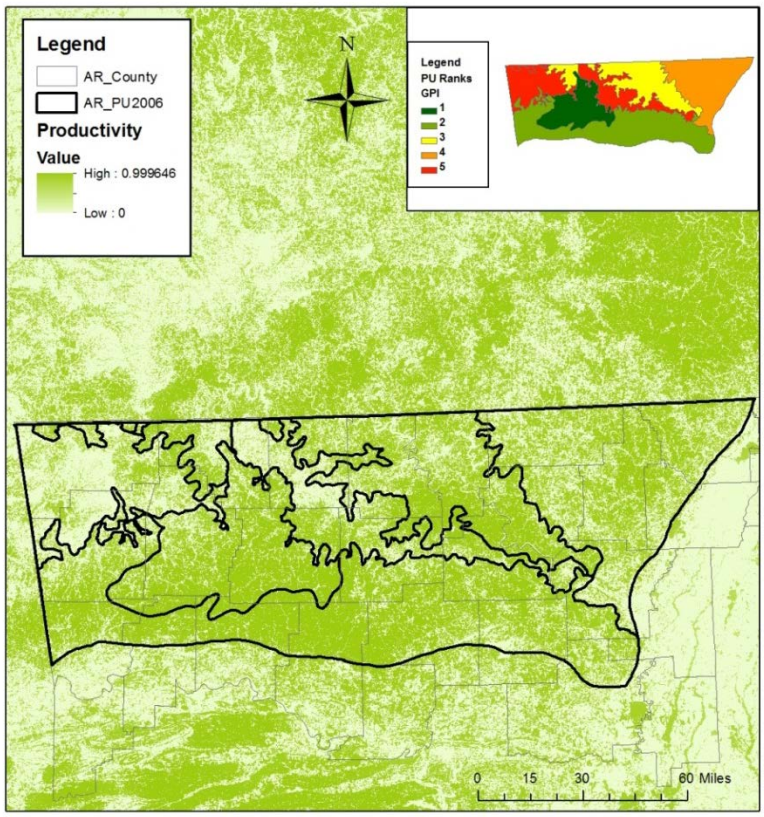


Figure 6. (Q4) Fragmentation of forested lands as measured by the General Productivity Index within the AR Sub-region. Mean index score on forested lands for each planning unit was used to produce ranks (inset) from high (1) to low (5).

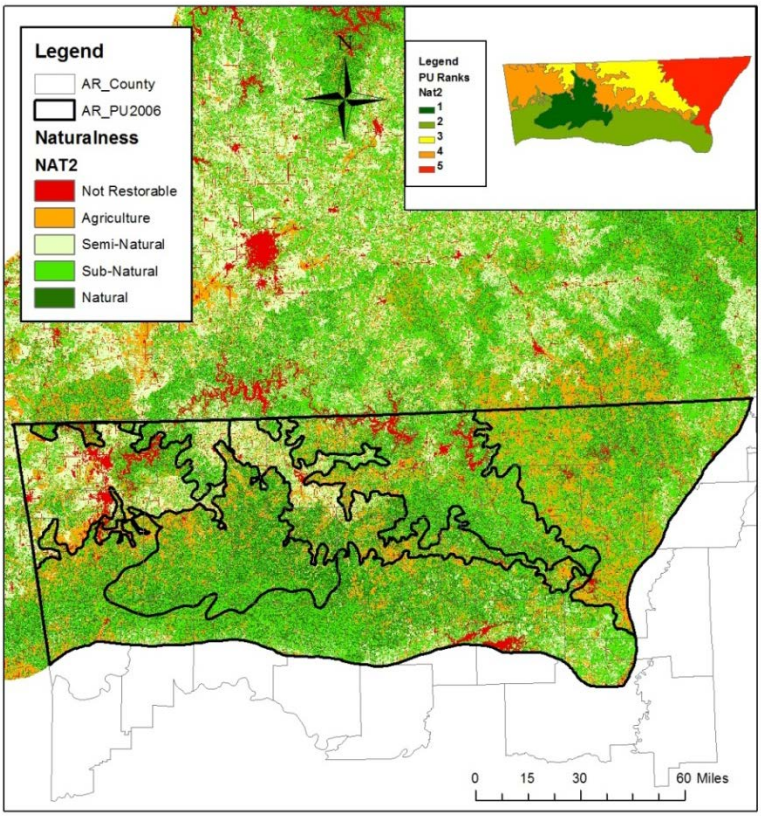


Figure 7. (Q4) Classification of the relative naturalness of lands within the Arkansas Sub-region following Ferrari et al. 2008. Proportion of each planning unit in the "Natural" class was used to produce ranks (inset) from high (1) to low (5).

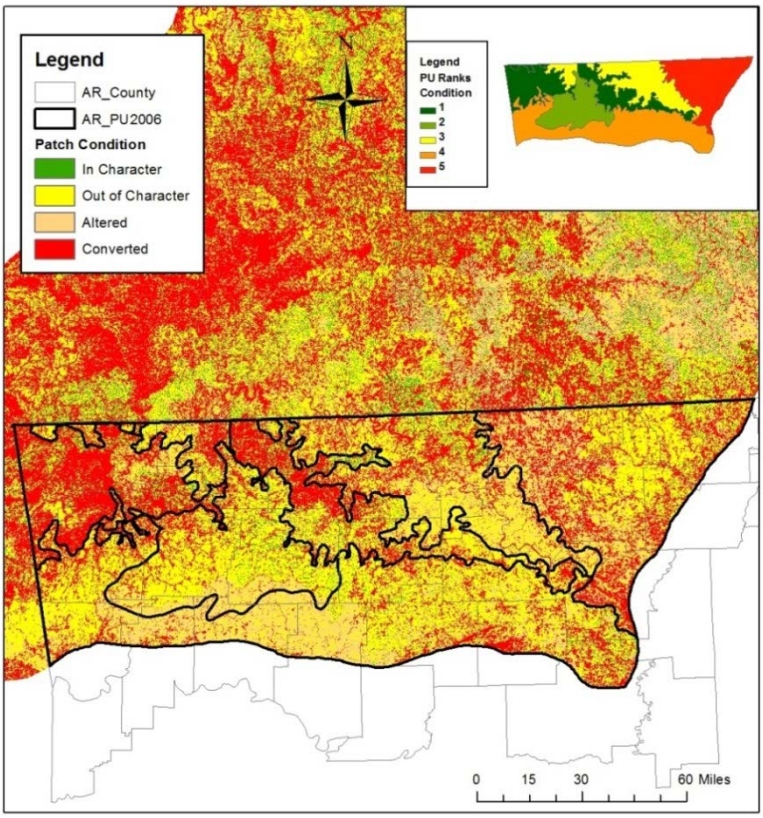


Figure 8. (Q4) Comparison between current and expected landscape patch conditions within the Arkansas Sub-region. Proportion of each planning unit in the "In Character" class was used to produce ranks (inset) from high (1) to low (5).

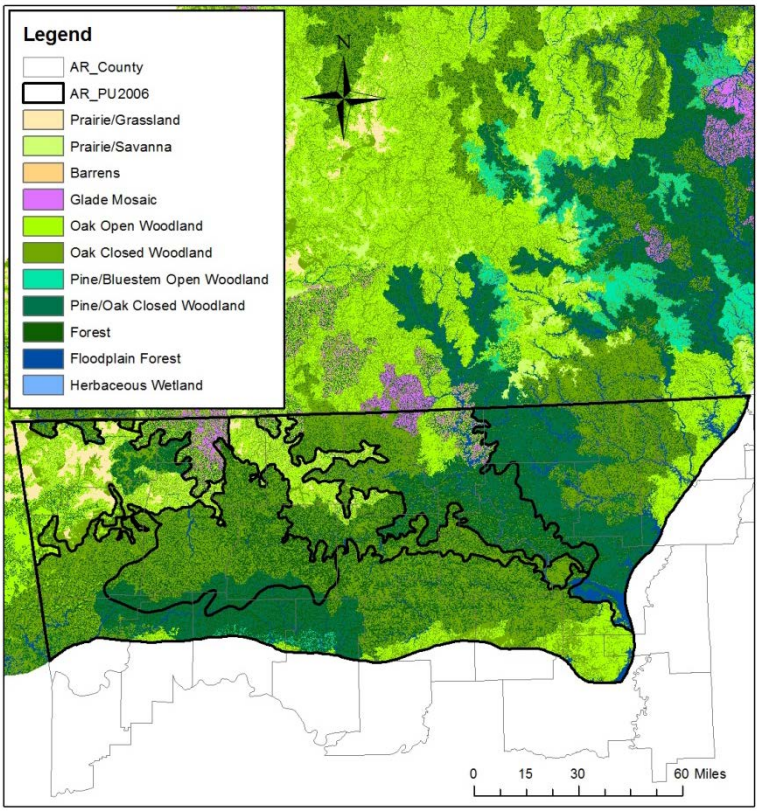


Figure 9. (Q5) The distribution of sites suitable for the restoration of broad natural communities within the AR Sub-region.

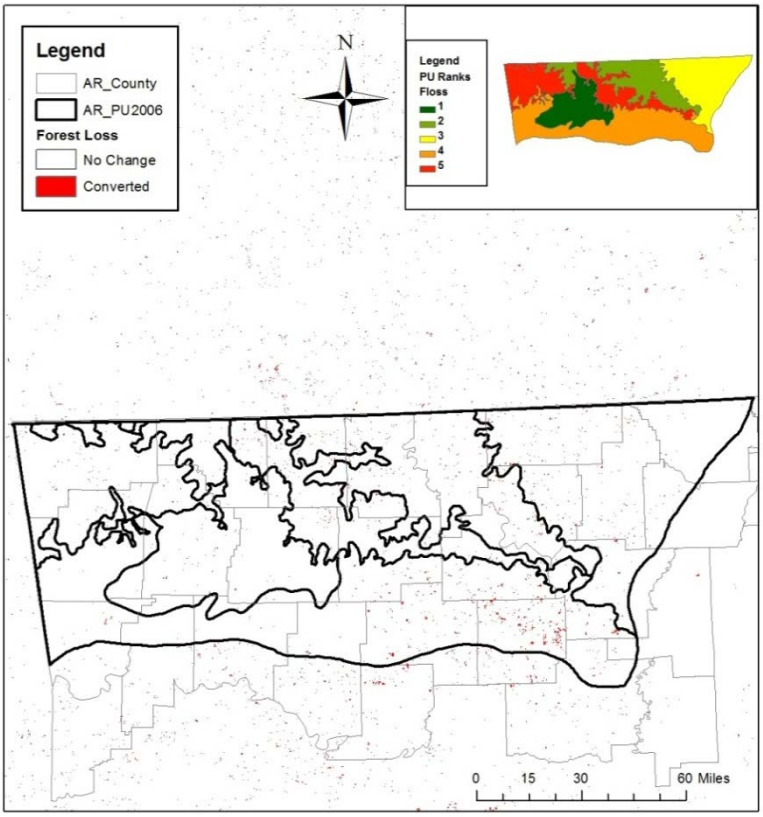


Figure 10. (Q6) Locations where cover class changed from a forest type to a non-forest type in 2006 within the AR Sub-region. Proportion of forest converted in each planning unit was used to produce ranks (inset) from low (1) to high (5).

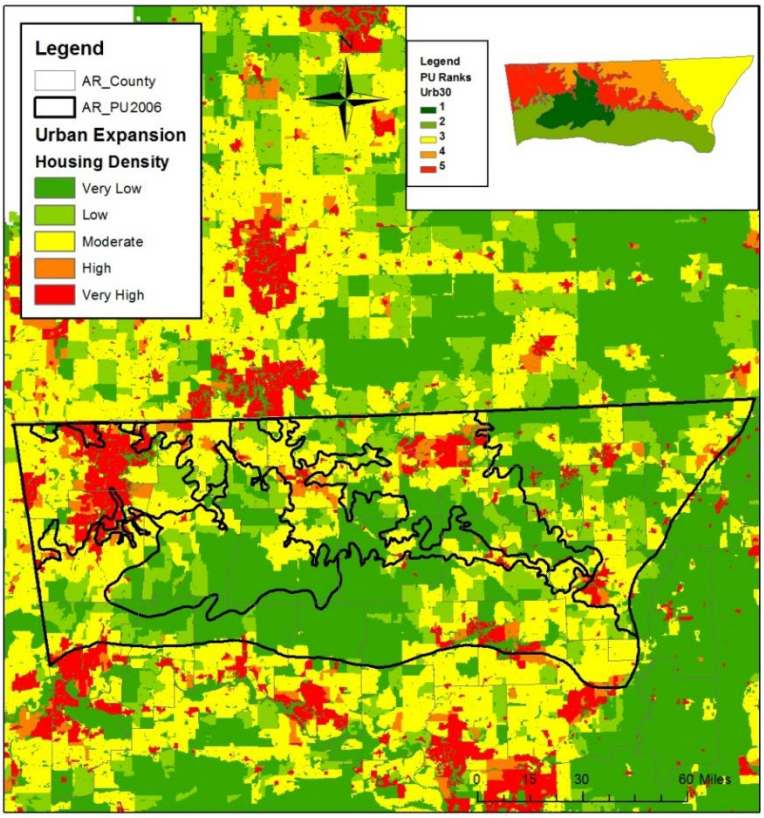


Figure 11. (Q6) The relative impact of current and projected housing density on management actions within the AR Sub-region. Proportion of each planning unit in the "Very Low" class was used to produce ranks (inset) from high (1) to low (5).