Summary of Stream Habitat and Fish Inventories on the Boston Mountain, Magazine, and Sylamore Ranger Districts, Ozark-St. Francis National Forest, 2007

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Introduction

The USDA Forest Service, Southern Research Station, Center for Aquatic Technology Transfer (CATT) has worked with resource managers on the Ozark National Forest (ONF) since 2004 to develop and implement customized stream inventories. CATT field crews have performed inventories on the Sylamore Ranger District (Leonard et. al. 2004), the Magazine and Boston Mountain Ranger Districts (Nuckols and Roghair, 2006), and the Bayou, Buffalo, and Pleasant Hill Ranger Districts (Krause and Roghair, 2006). In spring 2007 the ONF requested additional assistance with stream habitat and fish inventories on the Boston Mountain, Magazine, and Sylamore Ranger Districts. We deployed a biologist and 12 technicians from June 8 to 29, 2007 to quantify stream habitat conditions and provide associated fish assemblage information.

Methods

Habitat Inventory

Two-person crews performed customized stream habitat inventories (Krause and Roghair, 2006) based on the basinwide visual estimation technique (BVET) (Dolloff et al. 1993). We measured or estimated the following attributes:

All Habitat Units	Sub-Sample of Habitat Units
Type of habitat	Bankfull channel width
Length and width	Channel gradient
Maximum and average depth	Water temperature
Riffle crest depth	Photographs
Dominant and subdominant substrate	GPS coordinates
Rosgen channel type (Rosgen, 1996)	
Percent fines	
Large wood counts	

In addition, we noted stream features encountered including:

Stream Features
Waterfall
Tributary
Side Channel
Braided channel
Seep (spring)
Landslide
Bridge
Ford
Dam
Culvert

Fish Inventory

Four-person crews using a DC backpack electrofisher collected fish assemblage information from a sub-sample of habitat inventory pools and riffles as described in Krause and Roghair (2006). We recorded the following data:

- GPS coordinates
- Type of habitat unit
- Species name
- Counts of adult, age-0, and voucher specimens
- Electrofishing time (sec) and voltage

Pebble Count

Electrofishing crews also conducted pebble counts (Wolman heel-to-toe steps protocol) in sub-sampled riffle habitat units to characterize the substrate composition of sample reaches. Crew members measured the intermediate axis of a minimum of 100 pebbles per riffle as described in Bunte and Abt (2001).

Results

The CATT and ONF personnel attempted 59 inventories on 125 km of streams within 102 National Hydrography Dataset (NHD) stream reaches (Table 1 and 2). Field crews recorded a total of 10 km of dry and intermittent habitat, which truncated data collection during 32 inventories. BVET analyses for these sites were therefore incomplete; however the data will be useful in describing overall channel conditions. We did not complete an inventory on one flowing stream due to time constraints. We collected fish data from 123 pools and 97 riffles within 45 NHD reaches and pebble data from 86 riffles within 39 reaches (Table 3). The data collected by the CATT can be used to describe stream condition on the ONF and serve as a baseline for future comparisons.

Data Availability

Summer 2004-2007 habitat, fish, and pebble data are ready for migration into the Natural Resource Information System Water Module Version 1.2.3 (NRIS). We formatted the data according to the Regional NRIS Water migration template and transferred it to Leigh McDougal, the Regional NRIS migration coordinator. As data are migrated into NRIS Water the CATT will coordinate development of custom query and reporting tools for the ONF. In the interim, the CATT is available to assist with data analysis and report preparation. Keith Whalen, ONF Fishery Biologist, received a copy of all data in electronic format.

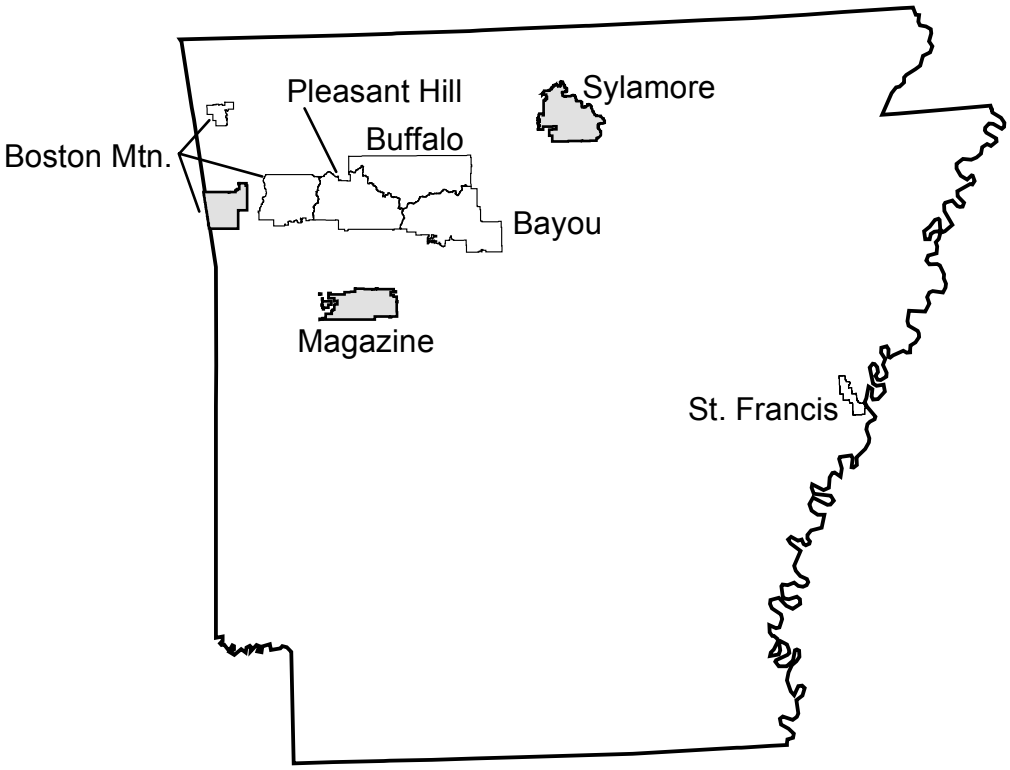

Figure 1. Ranger Districts on National Forest land in Arkansas. The CATT visited the Boston Mountain, Magazine, and Sylamore Ranger Districts (shaded in gray) in summer 2007.

Table 1. Summary of inventories by Ranger District on the Ozark National Forest. Kilometers of habitat inventoried, number of NHD reaches visited, total number of inventories performed, and number of incomplete inventories on the Boston Mountain, Magazine, and Sylamore Ranger Districts, summer 2007. Incomplete inventories are primarily due to dry or intermittent streambed.

District	Km	Reaches	Total Inventories	Incomplete Inventories
Boston Mtn	45.3	33	10	2
Magazine	29.5	35	28	23
Sylamore	50.5	34	21	8
Total	*125.2*	*102*	*59*	*33*

Table 2. Summary of stream habitat inventories by 6th level hydrologic unit code (HUC). Kilometers of habitat inventoried, number of NHD reaches visited, total number of inventories performed, and number of incomplete inventories in 6th level HUCs on the Boston Mountain, Magazine, and Sylamore Ranger Districts, summer 2007. Incomplete inventories are primarily due to dry or intermittent streambed (see Table 3 comments for details).

District	6th Level HUC	Km Habitat Inventoried	NHD Reaches Visited	Total Inventories	Incomplete Inventories
Boston Mtn	111101030703	0.5	1	1	1
	111101040402	5.2	6	1	0
	111101040403	7.0	5	1	0
	111101040404	18.8	12	4	1
	111101040405	10.6	7	2	0
	111102010502	3.3	2	1	0
	Total	*45.3*	*33*	*10*	*2*
Magazine	111102020401	20.6	20	15	11
	111102040207	8.8	15	13	12
	Total	*29.5*	*35*	*28*	*23*
Sylamore	110100040101	3.5	4	1	0
	110100040103	21.0	12	9	4
	110100040105	6.7	6	3	1
	110100040302	19.2	12	8	3
	Total	*50.5*	*34*	*21*	*8*
	Grand Total	*125.2*	*102*	*59*	*33*

Table 3. Summary of stream habitat inventories by NHD reach. Reaches visited, kilometers of habitat inventoried, number of pools and riffles electrofished, and number of pebble inventories completed in NHD reaches on the Boston Mountain, Magazine, and Sylamore Ranger Districts.

District	6th Level HUC	NHD Reach	Stream Name	Km Habitat Inventoried	# Pools Efished	# Riffles Efished	# Pebble Inventories	Comments
Boston Mtn	111101030703	11110103001615	Unnamed	0.5				Intermittent
Boston Mtn	111101040402	11110104000090	Lee Creek	1.9				
Boston Mtn	111101040402	11110104003337	Lee Creek	1.9				
Boston Mtn	111101040402	11110104003344	Lee Creek	0.1				
Boston Mtn	111101040402	11110104003354	Lee Creek	0.7				
Boston Mtn	111101040402	11110104003355	Lee Creek	0.1				
Boston Mtn	111101040402	11110104003364	Lee Creek	0.5				
Boston Mtn	111101040403	11110104000073	Lee Creek	0.2				
Boston Mtn	111101040403	11110104000074	Lee Creek	1.1	1	1	1	
Boston Mtn	111101040403	11110104000075	Lee Creek	0.3				
Boston Mtn	111101040403	11110104000102	Fall Creek	5.4	3	2	2	
Boston Mtn	111101040403	11110104000103	Fall Creek	0.1				
Boston Mtn	111101040404	11110104000117	Cove Creek	1.5				
Boston Mtn	111101040404	11110104000118	Cove Creek	0.3				
Boston Mtn	111101040404	11110104000119	Cove Creek	0.6				
Boston Mtn	111101040404	11110104000120	Cove Creek	1.6	1	1		
Boston Mtn	111101040404	11110104000121	Cove Creek	0.9		1	1	
Boston Mtn	111101040404	11110104000122	Cove Creek	0.3				
Boston Mtn	111101040404	11110104000123	Cove Creek	2.4	1			
Boston Mtn	111101040404	11110104001996	Buckhorn Creek	2.9	3	2	2	
Boston Mtn	111101040404	11110104001997	Buckhorn Creek	1.2	1	1	1	
Boston Mtn	111101040404	11110104002001	Unnamed	5.2	7	6	5	
Boston Mtn	111101040404	11110104003385	Unnamed	1.2				
Boston Mtn	111101040404	11110104003394	Buckhorn Creek	0.8	3	2	2	
Boston Mtn	111101040405	11110104000536	Mountain Fork	1.7	1			
Boston Mtn	111101040405	11110104000539	Mountain Fork	0.7		1	1	
Boston Mtn	111101040405	11110104000540	Mountain Fork	1.0	1			

Table 3. Continued.

District	6th Level HUC	NHD Reach	Stream Name	Km Habitat Inventoried	# Pools Efished	# Riffles Efished	# Pebble Inventories	Comments
Boston Mtn	111101040405	11110104000541	Mountain Fork	1.1		1	1	
Boston Mtn	111101040405	11110104000542	Mountain Fork	1.8	2	1	1	
Boston Mtn	111101040405	11110104002047	Whitzen Hollow Creek	0.2		1	1	
Boston Mtn	111101040405	11110104002048	Whitzen Hollow Creek	4.1	2	1	1	
Boston Mtn	111102010502	11110201000223	West Cedar Creek	2.7	2	2	1	
Boston Mtn	111102010502	11110201000224	West Cedar Creek	0.5				
Magazine	111102020401	11110202000426	Short Mountain Creek	1.4	1	2	2	
Magazine	111102020401	11110202000427	Cove Creek	0.5	1	1	1	
Magazine	111102020401	11110202000428	Cove Creek	0.9	1	1	1	
Magazine	111102020401	11110202000429	Cove Creek	1.8	2	1	1	
Magazine	111102020401	11110202000430	Cove Creek	0.8		1	1	
Magazine	111102020401	11110202000431	Cove Creek	1.1	1			
Magazine	111102020401	11110202000486	Gutter Rock Creek	4.4	4	3	2	
Magazine	111102020401	11110202000546	Gum Creek	2.9	10	5	5	
Magazine	111102020401	11110202001206	Unnamed	0.5				Intermittent
Magazine	111102020401	11110202001208	Unnamed	0.5				Dry
Magazine	111102020401	11110202001217	Cove Creek	1.9	2	2	2	
Magazine	111102020401	11110202001218	Cove Creek	0.6				
Magazine	111102020401	11110202001220	Unnamed	0.5				Dry
Magazine	111102020401	11110202005103	Unnamed	0.5				Intermittent
Magazine	111102020401	11110202005158	Unnamed	0.4				Dry
Magazine	111102020401	11110202005159	Unnamed	0.5				Dry
Magazine	111102020401	11110202005160	Unnamed	0.2				Dry
Magazine	111102020401	11110202005251	Unnamed	0.5				Dry
Magazine	111102020401	11110202005270	Unnamed	0.5				Dry
Magazine	111102020401	11110202005290	Unnamed	0.3				Low priority
Magazine	111102040207	11110204000348	Revilee Creek	1.9	2	1	1	

Table 3. Continued.

District	6th Level HUC	NHD Reach	Stream Name	Km Habitat Inventoried	# Pools Efished	# Riffles Efished	# Pebble Inventories	Comments
Magazine	111102040207	11110204000674	Briar Creek	0.8				Dry
Magazine	111102040207	11110204000675	Unnamed	0.3				Dry
Magazine	111102040207	11110204000676	Briar Creek	0.4				Dry
Magazine	111102040207	11110204000679	South Wicked Creek	1.9	1	2	2	Intermittent
Magazine	111102040207	11110204001247	Revilee Creek	1.0				
Magazine	111102040207	11110204001844	North Wicked Creek	0.5				Dry
Magazine	111102040207	11110204001996	Unnamed	0.3				Dry
Magazine	111102040207	11110204002046	Unnamed	0.4				Dry
Magazine	111102040207	11110204002068	Unnamed	0.3				Intermittent
Magazine	111102040207	11110204002078	Unnamed	0.2				Dry
Magazine	111102040207	11110204002080	Unnamed	0.2				Dry
Magazine	111102040207	11110204002112	Unnamed	0.3				Intermittent
Magazine	111102040207	11110204002137	Unnamed	0.3				Dry
Magazine	111102040207	11110204002161	Unnamed	0.3				Dry
Sylamore	110100040101	11010004000443	Perry Creek	1.4	4	4	3	
Sylamore	110100040101	11010004000444	Perry Creek	0.2				
Sylamore	110100040101	11010004000445	Perry Creek	1.0				
Sylamore	110100040101	11010004000446	Perry Creek	1.0				
Sylamore	110100040103	11010004000496	Sneeds Creek	2.8	9	6	2	
Sylamore	110100040103	11010004000497	Sneeds Creek	2.4				
Sylamore	110100040103	11010004000534	Walker Creek	4.1	10	7	7	
Sylamore	110100040103	11010004001206	Coldwater Creek	1.0	4	4	4	
Sylamore	110100040103	11010004001213	Unnamed	1.5				
Sylamore	110100040103	11010004001214	Goose Creek	0.4	1	1	1	
Sylamore	110100040103	11010004001215	Goose Creek	0.1				
Sylamore	110100040103	11010004001216	Farris Creek	2.4	3	3	3	
Sylamore	110100040103	11010004001218	Twin Creek	3.7	5	4	4	

Table 3. Continued.

District	6th Level HUC	NHD Reach	Stream Name	Km Habitat Inventoried	# Pools Efished	# Riffles Efished	# Pebble Inventories	Comments
Sylamore	110100040103	11010004001221	Unnamed	0.5				Dry
Sylamore	110100040103	11010004001222	Farris Creek	1.3				
Sylamore	110100040103	11010004002392	Flower Creek	0.8				
Sylamore	110100040105	11010004000512	Sugarloaf Creek	2.0	2	1	1	
Sylamore	110100040105	11010004001179	Sycamore Creek	2.1	4	4	4	
Sylamore	110100040105	11010004001180	Sycamore Creek	0.1				
Sylamore	110100040105	11010004001181	Sycamore Creek	0.6				
Sylamore	110100040105	11010004001201	Cataract Creek	0.7	3	3	3	
Sylamore	110100040105	11010004001202	Cataract Creek	1.2				
Sylamore	110100040302	11010004000593	Unnamed	2.8	5	3	3	
Sylamore	110100040302	11010004001147	Livingston Creek	2.5	3	2	1	
Sylamore	110100040302	11010004001148	Livingston Creek	0.1				
Sylamore	110100040302	11010004001149	Livingston Creek	0.2				
Sylamore	110100040302	11010004001150	East Livingston Creek	2.0	4	3	3	
Sylamore	110100040302	11010004001153	Unnamed	1.6	1	2	1	
Sylamore	110100040302	11010004001155	Unnamed	1.9	2			
Sylamore	110100040302	11010004001156	West Livingston Creek	2.1	1	1	1	
Sylamore	110100040302	11010004001157	West Livingston Creek	0.4				
Sylamore	110100040302	11010004001161	West Livingston Creek	1.0				Dry
Sylamore	110100040302	11010004004552	Bearhead Branch	2.3	9	7	7	
Sylamore	110100040302	11010004004555	Bearhead Branch	2.4				
			Grand Total	*125.2*	*123*	*97*	*86*	

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