

## CMU 3 - BOTTOMLAND HARDWOODS

This area is a narrow riparian area along Noname Creek consisting of uneven-aged hardwoods which have been mismanaged through past harvesting methods. The harvests have been diameter-limit cuts which have resulted in high-grading of the forest stand. Some less commercially valuable, shade-tolerant species in the understory have never been cut. The last cut was about 20 years ago. Nature Conservancy Land adjoins the bottomland area at the south end.



Note: Diameter-limit harvesting typically involves the removal of all trees equal or greater to than a diameter considered to be merchantable in the local market. In many stands, this kind of harvest can remove valuable, larger trees that are continuing to grow at fast rates, providing valuable protection to understory tree regeneration, and/or providing habitat/mast for certain wildlife species. These situations are called “high-grading” because the highest value trees are indiscriminately removed. The resulting poor condition of the residual stand can persist for decades if not corrected.

The stream banks of Noname Creek are eroding in several spots through undercutting of the banks during times of high flow. The streambed contains sandbars from sedimentation of the eroding banks within the unit and from upstream areas. The stream crossing consists of an old, undersized culvert that has been damaged by flooding and is acting as a barrier to fish movement. Other evidence of water quality degradation is muddy water for several days after a rain. [Stream Visual Assessment Protocol](#) resulted in a [score of 5.9](#), or low condition.

[Wildlife habitat evaluation score](#) was 0.4 on a scale of 0 to 1.0. The tree density is low next to the creek. The basal area along the creek was measured to be 40 square feet per acre. Lack of sufficient shading on the water has caused increased stream temperatures and thus has impaired the coldwater fishery. The clients say that they used to catch large trout in the creek, but they have only caught very small trout and suckers during the last couple of years. Afternoon water temperature in the stream was measured at 70 degrees Fahrenheit by the planner.

Note: A concern with influencing stream water temperature on larger streams is the overall effect of a single planning unit in relation to the entire watershed. A single unit that has been harvested may have only a small effect on water temperature. However, the cumulative effect of many harvests can “fragment” continuous forested conditions and eventually increase stream water temperature to undesirable levels.

The planner decides to show the clients a different type of forest inventory technique in this unit. They do a 10 percent [fixed-plot inventory](#) on the field consisting of eight ¼-acre plots. The fixed-plot information below show results of the inventory.

**Fixed Plot: CMU 3 (bottomland hardwoods)**

Fixed Plot No.	Species	Plot Basal Area	DBH (in.)	Condition	Notes
1	Hardwood 1	7.1	14	FAIR	
	Hardwood 1		10	GOOD	
	Hardwood 2		22	POOR	Hollow
	Hardwood 1		18	POOR	Excessive knots
	Hardwood 3		14	FAIR	
2	Hardwood 4	6.8	8	GOOD	
	Hardwood 2		24	POOR	Hollow
	Hardwood 3		14	POOR	
	Hardwood 1		12	GOOD	
	Hardwood 1		10	GOOD	
	Hardwood 4		8	FAIR	
	Hardwood 4		10	GOOD	
3	Hardwood 1	5.8	6	POOR	Suppressed
	Hardwood 3		12	POOR	Forked at 12 ft.
	Hardwood 4		6	GOOD	
	Hardwood 2		18	FAIR	
	Hardwood 3		12	POOR	
	Hardwood 1		8	GOOD	
	Hardwood 3		6	GOOD	
	Hardwood 5		4	FAIR	
	Hardwood 2		16	POOR	Excessive knots
4	Hardwood 5	4.1	6	GOOD	
	Hardwood 1		10	GOOD	
	Hardwood 1		12	GOOD	
	Hardwood 3		6	GOOD	
	Hardwood 2		20	POOR	Hollow
	Hardwood 1		6	FAIR	
5	Hardwood 2	4.5	18	POOR	Excessive knots
	Hardwood 4		12	GOOD	
	Hardwood 4		4	GOOD	
	Hardwood 5		8	FAIR	
	Hardwood 5		6	GOOD	
	Hardwood 1		10	GOOD	
	Hardwood 1		12	GOOD	
6	Hardwood 1	2.4	6	FAIR	
	Hardwood 3		10	GOOD	
	Hardwood 1		12	GOOD	
	Hardwood 2		10	GOOD	
	Hardwood 4		8	GOOD	
7	Hardwood 4	4.4	12	GOOD	
	Hardwood 3		4	FAIR	
	Hardwood 3		8	GOOD	
	Hardwood 2		22	POOR	Hollow
	Hardwood 3		10	POOR	
8	Hardwood 1	3.1	10	GOOD	
	Hardwood 4		10	GOOD	
	Hardwood 1		8	GOOD	
	Hardwood 1		10	FAIR	
	Hardwood 1		4	GOOD	
	Hardwood 2		14	FAIR	
<b>Total</b>		<b>38.2</b>			

Each tree diameter represents a certain basal area based on the formula  $\text{Pi} \times (\text{tree radius squared})$  in inches divided by 144 square inches per square foot. Thus, a 13.6 inch diameter tree has a radius of 6.8 inches with a calculated basal area of 1 square foot. The sum of basal areas of all trees for a single plot equals the plot basal area. The total of all plot basal areas was 38.2 square feet with an average of 4.8 square feet per plot. Each plot represents only 1/4-acre. To convert this average to a per acre value, multiply by 4 for an average basal area of 19.2 square feet.

Hardwoods 3 and 5 are shade tolerant species. The other species are shade intolerant.