

Timber Stakeholder FIA 5- Question Results

Background: In June 2016 the Black Hills National Forest - Forest Supervisor established a collaborative working group to define specific information about the standing forest inventory. The questions would be answered by a comprehensive data collection from a 2X intensified FIA plot survey and subsequent analysis. The FIA (Forest Inventory and Analysis) program is led by the US Forest Service Research and Development branch. The protocols for establishment and collection of forest survey data meet rigorous scientific and statistical standards so that the information derived can be used to make forest management decisions with confidence.

The members of the working group were:

Team Lead: Jerry Krueger; Black Hills NF Deputy Forest Supervisor

Forest Service: Kerry Burns and Blaine Cook

Industry: Ben Wudtke, Dan Buehler, and Adam Gahagan

Wyoming Forestry: Josh Van Vlack

South Dakota Forestry: Marcus Warnke

Working through a collaborative process, the working group developed 5 questions of interest that we would ask Forest Service FIA to answer. The five questions were broken out by the defined suitable base for timber production as defined in our 1997 Forest and Land Management Plan as well as land defined as Timberlands. Questions 1-4 contain sub-questions which break down the individual questions in to units of interest to the group, for example by tree volume broken out by diameter class.

The approximately 856,000 suitable base acres (total Forest size is roughly 1.2 million acres) represent locations where the vast majority of vegetation management activities, which result in commercial timber harvests, take place. There is a larger land base defined by FIA as Timberland where some vegetation management takes place which also generates small amounts of commercial timber products. Timberland is defined by FIA as forest land capable of producing in excess of 20 cubic feet per acre per year and not legally withdrawn from timber production, with a minimum area classification of 1 acre.

Field surveys of FIA plots in the Black Hills during 2017, 2018, and 2019 field seasons were completed and the data analysis released to the public on 29 January 2020. The FIA data summary and the data access tool can be downloaded at <https://usfs-public.box.com/v/BlackHillsFIAData>.

Black Hills NF staff used the information provided by FIA in these documents to derive the answers to the five questions. No manipulation of the FIA data or analysis took place, and answers are reported directly from the spreadsheets provided by to the forest by FIA.

To ease interpretation, the presentation of answers to the five questions for suitable base and timberlands is presented side by side in this document.

Current Forest Resource Condition

1. What is the standing live volume estimate for Black Hills NF?

a. Total volume on timberlands

Ponderosa pine ≥ 5 inches dbh = 11,544,243 CCF

Ponderosa pine ≥ 9 inches dbh = 8,648,666 CCF

b. Total volume on timberlands suitable base

Ponderosa pine ≥ 5 inches dbh = 7,958,314 CCF

Ponderosa pine ≥ 9 inches dbh = 5,995,428 CCF

c. Total volume on timberlands by diameter class

Ponderosa pine ≥ 5 inches dbh

5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9
387,682	1,147,496	1,589,743	1,755,853	1,671,683	1,664,142	1,260,366

19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9	31.0-32.9	All classes
978,167	648,681	206,894	74,733	78,106	35,350	45,347	11,544,243

Ponderosa pine ≥ 9 inches dbh

Diameter class												
9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0-30.9	31.0-32.9	All classes
1,172,387	1,429,661	1,447,730	1,497,293	1,159,779	913,582	610,813	195,746	70,877	74,146	33,574	43,077	8,648,666

d. Total volume on timberlands suitable base by diameter class

Ponderosa pine ≥ 5 inches dbh

Diameter class												
5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
273,822	753,614	1,071,112	1,182,942	1,127,835	1,203,750	932,874	699,122	520,846	112,553	54,632	25,211	7,958,314

Ponderosa pine ≥ 9 inches dbh

Diameter class										
9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
789,636	961,532	976,804	1,083,564	858,356	652,932	490,381	106,478	51,813	23,932	5,995,428

2. What is the annual gross growth estimate for Black Hills NF?

a. On timberlands

Ponderosa pine ≥ 5 inches dbh = 247,141 CCF

Ponderosa pine ≥ 9 inches dbh = 201,145 CCF

b. Within the suitable base

Ponderosa pine ≥ 5 inches dbh = 185,049 CCF

Ponderosa pine ≥ 9 inches dbh = 150,694 CCF

c. By diameter class on timberlands

Ponderosa pine ≥ 5 inches dbh

Diameter class												
5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
1,727	19,422	20,849	26,960	29,304	70,560	17,380	17,238	35,881	7,213	-17,483	18,090	247,141

Ponderosa pine ≥ 9 inches dbh

Diameter class										
9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
16,714	22,077	24,928	63,725	16,203	16,253	33,824	6,827	-16,580	17,174	201,145

d. By diameter class in suitable base

Ponderosa pine ≥ 5 inches dbh

Diameter class												
5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
2,034	13,247	20,391	22,209	24,945	43,247	14,837	7,199	30,511	6,857	-8,140	7,712	185,049

Ponderosa pine ≥ 9 inches dbh

Diameter class										
9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
16,327	18,114	21,519	39,207	13,828	6,841	28,762	6,489	-7,715	7,322	150,694

e. What is the annual gross growth projection (commercial) for the next decade?

See various scenarios in Graham, R. and Battaglia, M. 2020. Timber Growth and Yield Report in a Changing Forest. USDA Forest Service, Rocky Mountain Research Station. Fort Collin, CO.

3. What is the annual net growth estimate for Black Hills NF?

a. On timberlands

Ponderosa pine ≥ 5 inches dbh = -94,558 CCF

Ponderosa pine ≥ 9 inches dbh = -54,328 CCF

b. Within the suitable base

Ponderosa pine ≥ 5 inches dbh = -59,654 CCF

Ponderosa pine ≥ 9 inches dbh = -27,715 CCF

c. By diameter class on timberlands

Ponderosa pine ≥ 5 inches dbh

Diameter class												
5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
-5,640	-15,866	-29,502	-38,428	-27,181	17,636	-13,094	-9,764	35,881	-2,614	-17,483	11,496	-94,558

Ponderosa pine ≥ 9 inches dbh

Diameter class										
9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
-20,505	-31,081	-23,802	16,169	-11,850	-8,946	33,824	-2,472	-16,580	10,915	-54,328

d. By diameter class in suitable base

Ponderosa pine ≥ 5 inches dbh

Diameter class												
5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
-3,846	-15,629	-20,360	-28,131	-13,052	11,000	2,389	-12,544	30,511	-2,970	-8,140	1,118	-59,654

Ponderosa pine ≥ 9 inches dbh

Diameter class										
9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	All classes
-13,760	-22,848	-11,354	10,205	2,339	-11,597	28,762	-2,810	-7,715	1,063	-27,715

e. What is the annual net growth projection (commercial) for the next decade?

See various scenarios in Graham, R. and Battaglia, M. 2020. Timber Growth and Yield Report in a Changing Forest. USDA Forest Service, Rocky Mountain Research Station. Fort Collin, CO.

4. What is the net growth to removal ratio on Black Hills NF?

Species & Diameter Limit	Inventory CCF	Net Growth CCF	Harvest Levels CCF	% Net Growth of Inventory	% Removal of Inventory	% Change in Inventory
a. Within the suitable base						
Ponderosa pine ≥ 5 inches dbh	7,958,314	-59,654	183,592	-0.7%	2.3%	-3.1%
Ponderosa pine ≥ 9 inches dbh	5,995,428	-27,715	153,534	-0.5%	2.6%	-3.0%
b. Within timberlands						
Ponderosa pine ≥ 5 inches dbh	11,544,243	-94,558	191,387	-0.8%	1.7%	-2.5%
Ponderosa pine ≥ 9 inches dbh	8,648,666	-54,328	159,713	-0.6%	1.8%	-2.5%

5. What is the ability to produce an available sustained yield on the Forest (timberlands/suitable base) for the next decade?

a. What is the methodology for producing this estimate?

To answer this question, the Black Hills NF requested the US Forest Service Rocky Mountain Research Station scientists conduct a rigorous review of the FIA data to provide information on sustainability.

An official, scientifically peer reviewed report will result in a Forest Service General Technical Report. The report, Timber Growth and Yield Report in a Changing Forest is authored by Dr. Russ Graham, Dr. Mike Battaglia and Dr. Terrie Jain.